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Therapeutic Gazette

WHOLE SERIES, VOL. XXVI. DETROIT, MICH., AUGUST 15, 1902. THIRD SERIES, VOL. XVIII, No. 8.

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Original Communications.

THE EMPLOYMENT OF DIGITALIS AND ACONITE IN THE TREATMENT OF CARDIAC DISEASE.

BY H. A. HARE, M.D.,

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Among all the difficulties which have beset the subject of the proper use of drugs in disease, and there have been many, as we all know, it cannot be doubted that the factor of greatest importance has been the employment of remedies by physicians without their having a correct conception, and sometimes no conception at all, of the pathological process underlying the condition which is to be relieved. This depends upon the fact that many practitioners lack preliminary training not only in morbid anatomy and morbid physiology or pathology, but also fail to study the possible effect of well known drugs in abnormal states. The employment of certain remedies in disease has cast discredit upon therapeutics by their abuse, while many physicians who have carefully studied diseased organs become so saturated, so to speak, with the seriousness of the lesions which they find, that they scoff at the thought that drugs can be of service, forgetting that the vital powers are eliminated at the autopsy, and that the conditions present represent a state so grave that death has taken place—that is, the worst possible state of affairs is seen. I have made these opening remarks because I do not wish to be

considered a therapeutic optimist or nihilist, and because I so often emphasize the fault of using drugs when they cannot do good that I fear I may be called a therapeutic unbeliever. In no class of cases does what I have said hold true with greater force than in those of cardiac disease. Some physicians are content to diagnose valvular disease, prescribe digitalis, and ignore the state of the heart muscle, the state of the blood-vessels and that of the kidneys, liver, and even the dose of the drug, so long as it is within bounds not poisonous.

It has always seemed to me that it is the duty of the physician to study the condition of the heart muscle, and almost entirely exclude any suppositions as to the condition of the valves of the heart. While this may be an exaggerated way of making the statement which I wish to emphasize, it is resorted to because in the majority of instances we are apt to endeavor to decide which segment is diseased without a correspondingly careful study of the condition of the ventricular wall.

Again, it is by no means an uncommon practice of physicians, after determining more or less carefully the condition of the heart, to fail to make a careful study of arterial tension, pulse force, and equally important, to attempt to discover whether there is arteriocapillary fibrosis. Upon the condition of the heart muscle, and upon the development of arteriocapillary fibrosis, much more depends in the diagnosis, prognosis, and treatment of a case of so-called cardiac disease than is usually thought. It is also not permissible to reach correct conclusions in regard to these important factors in the case unless at the same time the renal condition is adequately investigated. And, again, it is not sufficient in many of these cases to be content with one or two examinations of the urine, which may fail to reveal albumin, unless at the same time estimations of urea are also made, and a careful record of the quantity of urine and of its specific gravity is kept. Not only do these renal conditions aid us in getting information concerning the probable conditions of the heart muscle and of the blood-vessels, but they also give us an insight into the ability of the kidneys to eliminate poisonous materials and the drugs themselves, both of which, if retained to an abnormal degree, produce results which are disadvantageous.

I have within the last few years devoted a great deal of attention, not only to these factors in these cases, but also to the question of the proper administration of the various cardiac stimulants, and equally important, as to the dose which each individual patient needs from day to day.

Digitalis, like iron, has proved itself so valuable, doing good in so many instances which seemed grave, that we are wont to forget that, like most things which do good, it can also do harm, and judging from my previous habit, and from the habit of other practitioners, I am convinced that in the great majority of instances digitalis is administered in doses which are much too large, and often continued over a period which is far too long. It is by no means an uncommon thing to find physicians administering as much as 10 or even 20 minims of tincture of digitalis three or four times a day in cases of marked rupture of compensation. There can be no doubt that in some cases such doses are necessary at the beginning of the treatment to meet the crisis which exists, and in much the same way that we are wont to give large doses of mercury in early syphilis, afterward cutting the doses down one-half, so it may be necessary at times to give massive doses of digitalis which, after a period, should be rapidly and considerably diminished. I have been surprised to find what excellent results I could produce by the use of such small amounts as one or two minims of an active, physiologically tested tincture of digitalis given three or four times a day, the patient being of course required to rest and so give his heart that most needed therapeutic aid when its compensation is ruptured.

Apropos of this, I may add that in my belief we often fail to get results from doses and from drugs upon which we rely, more because we are careless as to the physiological activity of the product than because we have made an error in judgment as to the remedy which is needed, or the dose which is required. With the important subject of the employment of drugs closely related to digitalis in the treatment of various cardiac conditions there is not space to deal in this paper. In deciding what cardiac stimulant is required in a given case we must not only consider the condition of the valves and the myocardium as already indicated, but we must, if possible, reach some conclusion in regard to the state of the coronary arteries. Digitalis, which improves the nutrition of the

heart, largely by improving the circulation in these arteries, can manifestly do more harm than good, if these nutritive vessels are so nearly closed that it is impossible for the heart to pump blood through them in increased quantity. And again, the myocardium may have undergone such advanced degeneration that it is impossible for the digitalis to improve the nutrition of the heart, although at the same time it may be driving the remaining healthy fibers to an endeavor far in excess of their ability.

I am also quite sure that in a certain number of cases of valvular disease the patient does not require digitalis or any other cardiac stimulant for the relief of his cardiac symptoms; but, on the other hand, in addition to rest, will often be greatly benefited by the administration of aconite, which has the same steadying effect upon the heart through its influence on the vagi as has digitalis, while by its sedative influence on the heart muscle in cases of excessive compensation, and by its relaxing effect upon the blood-vessels, it diminishes the overaction of hypertrophy which is sometimes confused with the tumultuous overaction of ruptured compensation. It is much easier for us to conclude, in the case of valvular disease, with dyspnea and disturbed heart-action, that these symptoms are due to a failing heart than that they are due to a hypertrophy and an excessive activity. Such cases I have frequently seen in men who are well developed, in the muscular sense, and whose occupation has caused them to do heavy manual work, or to take part actively in some of the severe athletic games. And not infrequently have I seen other cases in which the use of well balanced doses of aconite and digitalis have produced results which neither drug could produce by itself, although at first glance they are physiological antagonists.

Finally, the utter uselessness of expecting good results from either of these drugs in the treatment of certain cases of myocardium disease which persistently take severe exercise "for their health" needs to be emphasized. I have repeatedly seen cases of men of advanced years with somewhat fibroid blood-vessels who have mistaken the heaviness of advancing years for the heaviness of lack of exercise, and who on the golf field, on the bicycle, or by rowing or walking, have tried to drive away the symptoms from which they suffer, with a result that sooner or later the condition from which they are suffering becomes greatly aggravated, and they become more or less invalids if they are so fortunate as to escape sudden or nearly immediate death from their ill-judged efforts. It seems to me, too, that when we are attempting to treat such cases, and are endeavoring to administer doses and remedies as accurately as possible, we should insist upon quiet and a careful mode of life until we are able to determine that the remedies suit the case, for otherwise the change of exercise or change in diet may not only prevent the remedies from doing good, but also warp our judgment as to our own plan of treatment, and prevent us from instituting it in another case, when in reality, had proper precautions of this kind been taken, we would have increased confidence and been able to do much good to a large class of patients, for it is not to be forgotten that every one in this room sooner or later, according to his years, his inheritance, and his mode of life, develops more or less arteriocapillary fibrosis, degeneration of his myocardium, and sclerotic changes in his kidneys.

I may close by saying that curiously enough a very large proportion of the patients to which I have recently referred are physicians who, after a long life of intense nervous strain, not infrequently find themselves at a comparatively early age suffering from disorders of the heart, which they fail to recognize, either because on examining this organ they fail to discover murmurs, or because they do not recognize the fact that a physician's life seems to be peculiarly apt, as is that of the banker and large business manager, to develop degenerative cardiac change. The employment of strychnine, belladonna, and other drugs, in connection with digitalis and aconite, might be discussed if time permitted, but they are not included in the title of this paper, and therefore cannot be considered.

REPORT OF A CASE OF ALCOHOLISM TREATED WITH HYOSCINE HYDROBROMATE.

By R. E. Bering, M.D.,
Tulare, Calif.

For the past several months I have been called upon to relieve a man suffering from the effects of too much whiskey. He is a

citizen holding a very important position, and owing to business cares and anxieties could not stop drinking; consequently he went from bad to worse, until he was on the verge of delirium tremens, and was really in a pitiable plight. In this condition he appealed to me again to try and help him. Knowing how useless my past efforts had been, I disliked to take his case, seeing nothing but failure in the end; but for the sake of his family I consented, if he would promise to give himself up to me for four days (as past experience has taught me that one day of treatment and four or five of whiskey was his custom). I took him into my private sanitarium, darkened the room, and selected competent nurses to care for him.

Having read with much interest the article in the February issue of the THERAPEUTIC GAZETTE, by Dr. M. K. Lott, on the drink habit and its cure without pain, and knowing Dr. Lott by reputation, I decided to try his plan of treatment on my delirious patient. I must confess, however, that I started the treatment with considerable hesitancy. It is one thing for a man to break his own neck, but it is quite another to break it for him. This patient was delirious from whiskey, and I was preparing to start him on hyoscine and keep him intoxicated for forty-eight hours. However, I had faith, and started the treatment by giving ten grains of calomel Friday evening, March 15, put the patient to bed, and administered the medicine as per the directions of Dr. Lott as follows:

March 15, 5 P.M., hyoscine hydrobromate 1-100 gr.; pulse 78, delirious. Strychnine nitrate 1-30 gr.
March 15, 6 P.M., hyoscine, 1-200 gr. Pulse 64.
March 15, 7 P.M., hyoscine, 1-200 gr. Pulse 61.
March 15, 8 P.M., hyoscine 1-200 gr. Pulse 74, and having all kinds of hallucinations.
March 15, 9 P.M., hyoscine 1-200 gr. Pulse 75.
March 15, 10 P.M., hyoscine 1-200 gr. Pulse 86.
March 15, 11 P.M., hyoscine 1-200 gr. Pulse 86.
March 15, 12 P.M., hyoscine 1-200 gr. Pulse 74.
March 16, 1 A.M., hyoscine 1-200 gr. Pulse 86.
March 16, 2 A.M., hyoscine 1-200 gr. Pulse 83.
March 16, 3 A.M., hyoscine 1-200 gr. Pulse 76.
March 16, 4 A.M., hyoscine 1-100 gr. Pulse 83.
March 16, 5 A.M., hyoscine 1-100 gr. Pulse 90.
March 16, 6 A.M., hyoscine 1-100 gr. Pulse 78.
March 16, 7 A.M., hyoscine 1-200 gr. Pulse 88.
March 16, 8 A.M., hyoscine 1-200 gr. Pulse 84.
March 16, 9:20 A.M., hyoscine 1-100 gr. Pulse 84.
March 16, 10:30 A.M., hyoscine 1-100 gr. Pulse 84.
March 16, 11:30 A.M., hyoscine 1-100 gr. Pulse 72; restless.
March 16, 12:25 P.M., hyoscine 1-100 gr. Pulse 80.
March 16, 1:25 P.M., hyoscine 1-100 gr. Pulse 84.
March 16, 2:30 P.M., hyoscine 1-100 gr. Pulse 84.
March 16, 3:30 P.M., hyoscine 1-100 gr. Pulse 84; quiet.
March 16, 4:30 P.M., hyoscine 1-100 gr. Pulse 84; quiet.
March 16, 5:30 P.M., hyoscine 1-100 gr. Pulse 84; quiet.
March 16, 6:30 P.M., hyoscine 1-100 gr. Pulse 87; quiet.
March 16, 7:30 P.M., hyoscine 1-100 gr. Pulse 89; quiet.
March 16, 8:30 P.M., hyoscine 1-100 gr. Pulse 86; passed urine.
March 16, 9:30 P.M., hyoscine 1-100 gr. Pulse 86.
March 16, 10:30 P.M., hyoscine 1-100 gr. Pulse 84.
March 16, 11:30 P.M., hyoscine 1-100 gr. Pulse 82.
March 16, 12:30 A.M., hyoscine 1-100 gr. Pulse 84.
March 17, 1:30 A.M., hyoscine 1-100 gr. Pulse 87.
March 17, 2:30 A.M., hyoscine 1-100 gr. Pulse 85.
March 17, 3:30 A.M., hyoscine 1-100 gr. Pulse 85; restless.
March 17, 4:30 A.M., hyoscine 1-100 gr. Pulse 88.
March 17, 5:30 A.M., hyoscine 1-100 gr. Pulse 84.
March 17, 6:30 A.M., hyoscine 1-100 gr. Pulse 84.
March 17, 7:30 A.M., hyoscine 1-100 gr. Pulse 82.
March 17, 8:30 A.M., hyoscine 1-100 gr. Pulse 82; restless.
March 17, 9:40 A.M., hyoscine 1-100 gr. Pulse 78; quiet.
March 17, 10:30 A.M., hyoscine 1-100 gr. Pulse 72; restless.
March 17, 11:30 A.M., hyoscine 1-100 gr.
March 17, morphine sulphate 1-4 gr. Pulse 80; restless.
March 17, strych. nit. 1-30 gr.
March 17, 1:40 P.M. (milk), pilocarpine 1-10 gr. Pulse 84; better.
March 17, 2:30 P.M. (milk), pilocarpine 1-10 gr. Voided urine.
March 17, 4:10 P.M. (milk), pilocarpine 1-10 gr.
March 17, 4:20 P.M., pilocarpine 1-10 gr.
March 17, 4:55 P.M., liquid peptonoid.
March 17, 5:25 P.M., liquid peptonoid.
March 17, 6:15 P.M., liquid peptonoid. Pulse 72.
March 17, 6:45 P.M., liquid peptonoid.
March 17, 7:5 P.M., liquid peptonoid. Pulse 72.
March 17, 7:30 P.M., pilocarpine 1-10 gr.
March 17, 8 P.M., milk.
March 17, 8:30 P.M., liquid peptonoid. Pulse 77.
March 17, 10 P.M. Pulse 75.
March 17, 12 P.M., liquid peptonoid. Pulse 72.
March 18, 2 A.M., milk. Pulse 72.
March 18, 2:30 A.M., liquid peptonoid. Pulse 72.
March 18, 4 A.M. Pulse 77.
March 18, 6 A.M., milk.
March 18, 6:30 A.M., liquid peptonoid.
March 18, 7 A.M. Passed urine.
March 18, 7:40 A.M., milk.
March 18, 7:50 A.M. Pulse 70.
March 18, 8:30 A.M., pilocarpine 1-10 gr.
March 19, 8 P.M., bath. Has no desire for whiskey.

I discontinued the hyoscine after forty-

two doses had been given, and started with pilocarpine as shown above, using just enough to keep up the therapeutic action. In two hours after discontinuing the hyoscine the patient began to come from under the drug, and made an uninterrupted recovery. After four days of treatment I took him home, and on March 19 he attended to his usual duties, somewhat weak, but otherwise doing nicely, having no desire for whiskey; he eats better and sleeps better than he has for months. At no time was he in the least danger, his pulse being full and regular, never going higher than 90 per minute, and that only once. He was stimulated but twice during the course of treatment, and I now believe that could have been dispensed with. During the forty-two hours of hyoscine intoxication he had all kinds of hallucinations, was delirious, and never slept an hour during the entire time. He had one involuntary action of the bowels, and voided his urine twice without being conscious of doing so. No food of any kind was given him during the administration of the hyoscine, but water was given at frequent intervals. While under the influence of the hyoscine he would frequently try to get up; but by speaking to him he would quiet down, only to repeat his effort a few minutes later. I know of no other treatment where a man so thoroughly under the influence of whiskey as this patient could have been sobered up as quickly, and without any bad or unpleasant effect from the immediate withdrawal of his whiskey. He only lost four days away from his business, and up to this writing has not taken a drink or had a desire for one.

MALIGNANT EDEMA OF BOTH HANDS; RECOVERY WITHOUT AMPUTATION, DUE TO THE CONSTANT APPLICATION OF ACETOZONE.

By Murdoch Chisholm, M.D., L.R.C.P. London,
Surgeon to the Victoria General Hospital, Halifax, N. S.

I wish to report the following interesting clinical experience:

John Bambick, aged forty-six, a gold miner, married, came to the Victoria General Hospital February 15 with both hands, right eye, and face scorched and lacerated.

The day before the patient was trying to force a cartridge of frozen dynamite down into a hole in the rock with a stick of wood. An explosion followed, which scorched and lacerated the patient's hands and face. He was carried to a doctor's office, where his wounds were washed, trimmed by removal of hanging shreds, and dressed. In this condition he came to the hospital. I saw him three days after the accident. His general condition was good. Pulse and temperature slightly above normal. The patient's face, whiskers, and eyebrows were scorched, the conjunctiva of the right eye was partially detached, the cornea opaque, and vision absent. Both hands were scorched. The little finger of the right hand was blown off close to the first joint. The top of the ring finger was also blown off. The other fingers were severely bruised and peppered with small wounds. The soft parts of the left hand were badly lacerated in several places. The web of the thumb was severed by a wound which extended deeply into the muscles. The muscles of the little finger were similarly lacerated. There was a pungent smell like burnt hair or horn. The wounds on the hands presented a sloughing surface. They were being dressed by the house surgeon, Dr. Reynolds, with 1-to-6000 bichloride solution. I decided to continue this treatment and wait for a line of demarcation. On the 20th the smell became so offensive that the house surgeon resorted to baths of permanganate of potash followed by hot lotions of bichloride frequently repeated. For five days after this the temperature ranged between 98° and 100°. The offensive odor continued in spite of permanganate lotions, but the general condition remained good, and the hands presented nothing more than a sloughing surface on the more injured parts. There was very little swelling and not much redness away from the injured areas. On the 24th the temperature went up over the 100 mark in the evening. On the morning of the 25th it was normal; in the evening it went up to 101°, and continued to rise until the next evening, when it registered 105°, with delirium and restlessness.

The following morning, on finding the patient's condition so serious, I ordered him to the operating-room without examining the hands. On being chloroformed and the wet dressing removed, I realized for the first time that I had to do with a case of malignant edema. The odor was intense. The hands were swollen, red, and edematous. The edema extended over the back of the hands up to the wrists. A red streak

ascended up to the elbow, inner aspect. My first thought was to amputate, but I had not obtained the patient's consent. I therefore temporized by removing all sloughs, opening all wounds which had healed, scraping them out, and freely incising the hands where the swelling was greatest. On the back of the hand I made two incisions three inches long, exposing a thick layer of white gelatinous material. I also applied pure carbolic acid followed by alcohol, so much recommended by Powell of New York. In addition I soaked the hands well in 1-to-500 bichloride and 1-to-50 carbolic. Finally I wrapped them up in gauze soaked in a saturated solution of acetozone, and covered all with oiled silk.

In the evening after the operation the temperature fell to 102°; pulse dropped from 135 to 120. Next day at 2 P.M. the temperature rose to 103.8°, the pulse to 127. The patient was very restless. The dressings were changed every three hours, sometimes every two hours. There was an effort made to soak the hands in the antiseptic for half an hour at each dressing, but it was found hard to do more than liberally wash them with it. The patient was too weak to be propped up in bed, without which we could not satisfactorily soak his hands. During the night of the 28th the patient slept several hours. His hands were dressed every three hours, and his temperature fell to 102.5°.

March 1. The patient felt better, his delirium was less, his tongue was moist. Temperature 102°; pulse 124. The nurse on going off duty at night wrote: "Patient passed a fairly good day; complained of hands feeling sore after dressings were done. Talked quite a lot at times." The night nurse wrote: "Patient had a very good night, but is feeling weak."

March 2. Temperature 100.8°, pulse 129, at 9 A.M. At 6 P.M. temperature 102.2°, pulse 105. Redness extended up the arms. Ordered ichthyol 3 drachms, resorcin 1-2 drachm, lanolin 1 ounce, to be applied to the arms and forearms when being dressed. The edema was still confined to the wrists. It ended in a complete circle a little above the wrist-joints. The redness was in the line of the lymphatics, and had gone up past the elbows about two inches.

March 4. Left index-finger looked black and very much swollen. The tip was shrunken as in dry gangrene. I incised it freely.

March 6. Index-finger much reduced in size and more natural in color. The swelling and redness of the hands was reduced. Granulations were springing up along the sides of the white sloughs which formed along the lines of the first incisions over the edematous swellings, but redness and swelling had crept above the elbows and were within three inches of the axillæ. Temperature 100°, pulse 98.

March 9. Swelling and redness leaving the arm. Forearms still markedly edematous. Fluctuation detected above and back of left wrist. I opened it, and a large quantity of gangrenous-smelling pus came away. I syringed with acetozone full strength, driving it under the annular ligament out of both incisions on the back of the hands. Temperature 101° to 102.3°, pulse 100 to 90. Ointment was discontinued.

March 12. An abscess opened over the second joint of left thumb and above the annular ligament in front. Pus emitted a strong gangrenous odor. The left hand was still shiny, red, and edematous. The same condition extended over the extensors as far as three inches above the elbow. In front the whole arm and part of the forearm showed the skin shriveled and of a pale natural color. The right hand was very little swollen. Amputation wound nearly all healed. Some pus still oozed from over the metatarsal bone of little finger.

March 15. Left hand and arm not so swollen. Skin not so red. Made an incision over the inner side of the ulna over a loose and puffy soft spot; no pus, but a greenish-white layer of somewhat firm consistence presented instead of the gelatinous white of egg material that formed the body of the edematous swelling before mentioned. The right index-finger was much swollen and discharging pus. It was slit freely in front, well syringed, and packed with gauze. Left forearm in front quite soft and flabby, evidently from absorption of edema. Right hand and forearm looked well. Smell still very strong, particularly that from left hand.

March 23. Temperature 102°, and it had been rising since the 20th, when it touched normal. Found several abscesses had formed within the last two days. Opened an abscess extending from the middle of the left arm up to the anterior axillary fold, another on ulnar side of forearm two inches below elbow, and another on the radial side three inches above the wrist. Also opened two abscesses on the right forearm—one on

the ulnar side, the other in front of the forearm. All these abscesses were confined to the areolar tissues. The pus from them was not so very strong smelling as it had been. They were surrounded by intense erysipelatous looking borders. They were washed out with a saturated solution of acetozone, and what was very striking was the rapidity with which the undermined skin adhered to the parts below, union being quite firm forty-eight hours after they were lanced, leaving only the skin incisions to heal.

March 28. Temperature was normal since the day after the abscesses were lanced; pulse kept at 90. Patient looked well. Left arm and forearm were of natural color. Subcutaneous abscesses were all healed up to the line of incision, and these covered with healthy granulations. Size of hand very much reduced. Redness and edema still persisted, and some odor. Size of thumb and index-finger not much reduced. Right arm natural; right forearm fairly natural. Redness and swelling persisted about stump of little and ring finger, also up back of hand along ulnar border. Ring finger very much swollen.

April 1. Temperature up to 101°, pulse 116 for the last twenty-four hours. An abscess eight inches long and two inches wide formed above the left elbow during the last twenty-four hours. The whole posterior aspect of the arm was very red and swollen. Lanced and syringed with acetozone. Right ring finger was still red and swollen.

April 5. Since the 2d the temperature has been between 98° and 99°. Both arms were of normal size, forearms nearly so, hands reduced in size. Incisions all closed but the last and that on right index-finger, both of which were healing well.

April 8. Temperature 101°; but gone up since the previous day. Right hand much swollen, red, and edematous. Swelling extended from stump of little finger to the middle of forearm. An abscess formed over the stump. I lanced it. Characteristic odor obtained. Syringed it well with acetozone.

April 9. Temperature normal, and with slight variations so continued till the 21st, when all local applications were discontinued. Some edema still persisted, but the patient was encouraged to use his hands and expose them to the sun in the hospital grounds as much as possible.

REMARKS.

As far as I know this is the first case of malignant edema that has ever been saved without amputation. Too often indeed they have succumbed even after amputation. This case was saved by hard fighting, and every now and then when we thought every bacillus killed they would start again with frightful virulence, large abscesses forming in the course of twenty-four to thirty-six hours. It may be asked, then, why depart from the surgical rule of early amputation in this case?

In answer I have to state that after his temperature went up I did not see his hands till he was under chloroform ready for what I expected a simple operation. As soon as the bandages were removed I recognized the trouble from the edema and smell, together with the virulence of the local condition and severity of the general symptoms. But my patient being under chloroform I could not obtain his consent to amputation, so I decided to lessen as far as possible the focus of infection for that day and possibly amputate the next. But next day the fall in temperature, the improved appearance of the hands, the dread of sending a poor laboring man out into the world with two stumps, as well as a desire to test the antiseptic properties of acetozone, which I found excellent in other cases, saved the patient from a double amputation.

While a student and also in my practice I had met with four cases of malignant edema. Sir William MacCormac amputated a thigh of one of these, with what result I do not know, for I did not see the case afterward. But at the operation he emphasized the gravity of the condition, especially in the lower extremities. Another case in the practice of Dr. Fraser, Newfoundland, arose from a slight wound of the thumb. He amputated above the elbow and saved the patient's life. Another was a young child in the practice of a city physician, who would not consent to amputation, and death of course promptly occurred. The fourth case was my own. It arose from an abrasion on the leg treated by the application of sticking-plaster, and neglected. The exclusion of air gave the bacilli full chance to put in their work, and though the thigh was amputated the stump became infected, and death quickly followed. It was not therefore without fear and trembling that I waited in this case. I greatly feared that the patient would have to pay up for my waiting by a high amputation or loss of his life. But seeing the beneficial effects of the antiseptic from

day to day I continued to wait and combat signs as they arose. The bacillus being anaerobic, and acetozone being a powerful hyperoxide, I applied it unsparingly, hoping that enough oxygen would be absorbed through the incision and skin to destroy the bacilli. The dressings extended up to the armpits. The average quantity of lotion daily used was six gallons. At one time the supply ran out, and we resorted to bichloride, but the hands, forearms, and arms became so inflamed and angry looking that I wired Parke, Davis & Co. at once for more acetozone. It was promptly sent, but fortunately for the patient in the meantime I found a sample bottle which had been left with Dr. Stuart, and used it with very perceptible benefit.

A Word as to Diagnosis.—The disease is rare and apt to be overlooked. It has two marked characteristics—the smell and edema. The smell is very pungent and is compared to burnt horn. The edema is striking; it results from a free exudation of white jelly-looking material in the areolar tissues. Several times I buried my thumb out of sight when looking in the long axis of the limb. The swelling is not therefore a brawny hardness in this disease, not at least before gangrene of the parts supervenes. From the fact that the left index-finger in this case had turned black, that its tip shrank irregularly as in dry gangrene, and that all this disappeared on freely incising the finger, I believe the rapid onset of gangrene is largely from pressure. Another characteristic of this disease is its frightful virulence and resistance to all previously known remedies. It is generally also accompanied by the formation of hydrogen, which gives a crackling sensation when pressed upon. This was absent in my case.

My treatment was free incisions into the edematous swellings and the constant application of acetozone, which is a most powerful hyperoxide and germicide. I append hereto the pathologist's report:

BACTERIOLOGICAL REPORT.

March 1st. I accompanied Dr. Chisholm to the hospital and made four cultures directly from the discharge from the sinuses.

These cultures were on blood serum, gelatin slope, agar slope, and glucose agar. At the same time I made three cover-slip preparations and examined immediately. These were stained with weak carbolfuchsin, alkaline methylene blue, and gentian violet, respectively.

In all of these I found a staphylococcus and streptococcus, and a bacillus. The bacillus was comparatively large, but I was not able to make out the characters very definitely on account of the staphylococci, which were by far the more numerous.

The cultures were grown anaerobically in Buchner tubes, the blood serum and agar ones being incubated, and the gelatin kept at room temperature. On the third day I examined the gelatin and one agar culture.

Cover-slips made from them showed a bacillus of fairly large size, which was easily stained, had rounded ends, and a spore in the middle. The culture gave a very disagreeable odor.

The other cultures continued to grow and formed rounded colonies with a formation of gas. These will be reported on later.

Taking the microscopical and cultural characters together, I have no hesitation in saying that the bacillus was that of malignant edema.

(Signed) A. HALLIDAY,
Provincial Bacteriologist,
Nova Scotia.

APOMORPHINE IN PUERPERAL CONVULSIONS.

BY T. NEAL KITCHENS, B.E., B.A., M.D.,
Columbus, Ga.

While the etiology of eclampsia is still obscure, the diagnosis, as a rule, is very easy and need not be repeated here. "One swallow does not make a summer," and the experience of one man does not establish the therapeutic value of a drug; hence the object of this paper is to call the attention of the medical profession to the subject, not to instruct it.

Recently I have seen several cases of eclampsia during the puerperium in which the usual routine treatment failed to relieve. Having observed that apomorphine is not only a "typical central emetic," but also a powerful diaphoretic—almost the equal of pilocarpine without its tendency to produce pulmonary edema—I resolved to try it. As yet I have had no occasion to use it in convulsions before labor, but on account of its wonderful effect in postpartum cases I would not hesitate to use it at any stage of labor.

Apomorphine is not commended as a specific, but as an addition to the usual treatment with salines, veratrum, etc. Give one-twentieth grain hypodermically if you want the diaphoretic, not the emetic, effect; therefore give a small dose and if necessary re-

peat in half an hour. As yet I have not had to repeat the dose, nor have I obtained the emetic action of the drug. So far all cases have occurred in the practice of midwives, who as a rule, at least in this State, are very ignorant. Result: All recovered.

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*SALINE INFUSIONS, AND THEIR ADMINISTRATION FOR MENINGEAL SYMPTOMS IN AN INFANT.**

By Alfred Gordon, M.D.,
Instructor in Nervous Diseases, Jefferson Medical College.

The study of the humoral substances of the body in their physiological and pathological states led to the discovery of certain powerful agents in the treatment of infections and intoxications. As the blood is the principal agent that carries toxic products through the whole economy, the main effort in cases of infection consisted therefore of attacking not only the microbe in its seat of development, but also the poisons brought with the blood to various organs. Thus we have the antiseptic therapeutics and that of antitoxins; while the first is only palliative, the last has a neutralizing effect.

The rationale of treatment of all sorts of infections consists of applying a remedy to counteract the toxins circulating in the blood; the antitoxic serums will be the ideal one.

Unfortunately the antitoxic treatment within the limits of our present knowledge can be applied but to a few infectious diseases, and until more specific serums shall be discovered we must have recourse to other means in order to eliminate the accumulated toxic products of the blood. The old bleeding and purgation, despite their excellent effects, are not sufficient in many cases in which a direct, rapid, and energetic result is immediately sought for. The last we find in saline infusions.

The practice of saline infusions is a direct derivative of transfusion. In hemorrhages of a grave character transfusion of blood was used to a large extent, but this way of managing great losses of blood is almost abandoned because of the difficulty and danger of the procedure. It was necessary to substitute for it a solution which should have about the same chemical composition as the blood-serum, but which at the same time would not be toxic, or ruinous to the elements of the blood. This fluid introduced into the circulation of an individual whose vessels are almost empty after a hemorrhage would stimulate the circulation.

Although the exact action of the infusions is not yet known in all its details, we nevertheless must admit that their main purpose is to change the condition of the circulating fluid and increase the blood-pressure.

The subcutaneous or intravenous injections of saline solutions present nowadays a mode of treatment in some cases so efficacious that there is no physician or surgeon that would not be ready to have recourse to it again and again after he gave it a trial. Some writers however reported, it is true, accidents following saline infusion, but this was rather due to the method employed or to some fault of the technique. A point which should be really taken into consideration is the quantity injected, because in the majority of cases unfavorable symptoms were the result of a superfluous amount of the fluid. At all events, if occasionally we meet with undesirable though not fatal symptoms, they are transitory in character and insignificant in comparison with the brilliant services that the saline infusions may render.

The field of usefulness of saline infusions widens more and more. That hemorrhages, puerperal and others, can be arrested by them is too obvious to dwell upon. A sufficiently large number of observations are accumulated to warrant their use, when other means do not succeed. (See A. Gordon: Intravenous Injections of Artificial Serum in Puerperal Hemorrhages. *Annals of Gynecology and Pediatrics*, April, 1897.)

In cases of operative shock and diabetic coma saline infusions also prove valuable.

A particular interest in this respect we find in the treatment of infectious diseases. Cholera, typhoid fever, pneumonia, gastrointestinal infections, are the diseases that were reported to be greatly benefited by this mode of treatment. Here the rôle of the artificial serum is that of a lavage of the blood, with the result that the toxins are eliminated by the kidneys, bowels, skin, etc., and the various symptoms of disturbed functions of different organs will therefore be removed. Cerebral symptoms due to intoxications of gastrointestinal origin can

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*Read before the Philadelphia County Medical Society, May 14, 1902.

be greatly allayed by the administration of artificial serum. Administered as a last resort in some forms of meningitis it gave excellent results.

In the literature at my disposal I found only three cases of secondary meningitis treated by this means. The case that I am about to report is one of the most striking. After all possible means failed and hope was entirely abandoned, a normal saline solution resuscitated, I may say, my little patient, to the great surprise of every one who had charge of her. The case is as follows:

H. L. G., five months of age, passed through a rude experience in trying to accommodate her gastrointestinal tract to various forms of milk. She often had attacks of indigestion of short duration. During her last illness the following points were noted: One morning symptoms of intestinal indigestion began to appear. On that day the infant had about five or six stools, though not abundant. She looked weak, but there was nothing alarming in her condition. Her mother, a woman of intelligence, knew how to take care of the case. She suppressed the milk at once, and with a skilful management succeeded in reducing the number of stools to two or three. The child began to improve. Nevertheless some members of the family from overanxiety induced the mother to call in a physician, who with one stroke discarded the mother's wise treatment, readministered the milk, and in addition to this prescribed a drug which checked totally the movements of the bowels. The child had not had a passage for several hours and passed no gas. Then the patient's condition changed entirely. She refused taking the bottle, and when fluid was poured into her mouth she rejected it, not being able to swallow. Her usual intelligent look disappeared, and the child seemed to go down rapidly. The doctor called again, and advised to continue the same treatment. The condition of course looked more and more unfavorable. Several hours later the doctor gave up the little patient, saying nothing could be done and she must die.

These were the circumstances that I had to face when I was called in. Before I could reach the town where the patient was located several hours elapsed. I found the little being lying motionless in the crib. The tip of the nose was white and cold, the breath had lost its natural warmth, the lips were pale, and the tips of the fingers bluish. The adipose tissue of the orbits had disappeared, and the eyeballs had sunk back into the orbits. Body was cold, pupils slightly dilated, reflexes very much diminished, extremities flaccid, heart-beats rapid but weak, pulse very small. I learned that there was no movement of bowels, no gas passed through the rectum, also no urine was voided, during the last eight or nine hours.

The outlook certainly was grave, and at no moment did I expect recovery.

During the following seven hours the patient was kept surrounded with artificial heat, and low and high warm enemas were administered repeatedly. Sweet spirit of nitre was deposited on the tongue drop by drop, also some fresh bouillon. At the end of that time the child urinated, but a very small quantity. The body gradually became warmer. A ray of hope appeared. Unfortunately the scene changed entirely: suddenly the little patient became rigid, and took a position of opisthotonos; the neck became extended, so that it was impossible to flex; eyes rolled up and placed in convergent strasbismus; the arms flexed rigidly; abdomen retracted. The body temperature at that moment was 104°, and pulse filiform. The superficial and deep reflexes were all markedly increased; ankle clonus on the right side.

The meningeal symptoms persisted from 7 A.M. to 3 P.M., during which time the child was placed in warm baths, and warm rectal injections of salt water were administered. The rigidity would disappear for a short time, and then reappear. As there was no trismus, sweet spirit of nitre and warm bouillon was poured drop by drop in the mouth. Some was swallowed and some rejected. During the eight hours the struggle between life and death was great. The temperature oscillated between 103° and 104°. Ice was kept on the head. The pulse was very small, filiform, and at times it seemed to me imperceptible. The breathing was very superficial and rapid. The lungs were free from râles. Whenever the pulse would become more imperceptible, I would inject hypodermically a few drops of ether, and then it would come up. Occasionally slight clonic spasms would appear in the lower extremities. As there was an evident toxemia causing the meningeal symptoms, all my thoughts were directed to some means that would help to eliminate the toxins circulating in the blood and irritating the

cortex, as well as the base and the membranes of the brain. As the meningeal symptoms persisted at the end of the eighth hour, I decided at once to have recourse to saline infusions. The nurse was ordered to prepare a normal solution (7 per 1000) with filtered and boiled water. I poured it in an ordinary fountain syringe, attached the rubber end of the tube to an ordinary hypodermic syringe, the piston of which was removed, and inserted the needle in the outer aspect of the left arm. The quantity injected at first was about 15 cubic centimeters. I waited for the effect while watching the patient. Within about ten minutes after the fluid was absorbed the patient's face changed. The first effect showed itself in the quantity of urine, which became more abundant. The strabismus had a tendency to decrease, also the rigidity of the neck. The temperature gained a few tenths, but later went down to 102°. Pulse became more rapid and fuller, the breathing less frequent. Unfortunately the condition lasted but one hour.

Encouraged by the effect thus obtained I readministered the same quantity, with again the same immediate effect; but this time the good result was maintained. To avoid repetition I shall say that the most marvelous effect of the infusion was manifested in the function of the kidneys and the circulation. I had no difficulty in perceiving the heart-beats; the pulse, although more frequent, became full and strong. The patient began to urinate very frequently. In order to assist the elimination I administered then a high rectal saline enema and evacuated an abundant amount of dark fluid feces. The patient soon afterward became covered with a profuse perspiration; the strabismus and rigidity of the neck gradually disappeared, only a slight stiffness remaining in the lower extremities, with increased knee-jerks. The pupilary reflexes reappeared, the face regained its natural color, and the extremities became warm.

As the object of this paper is to report the effect of the saline infusion in a case with meningeal symptoms, I will not go into the details of the convalescence. I shall merely mention that it was extremely slow, but at no time was there a recurrence of the symptoms. The child is living and in perfect health.

Such was the result of the saline infusions. It is not my intention to describe the technique or to enter into discussion of the theories concerning the intimate effect of the artificial serum upon the blood and tissue. I wish only to report a fact.

A few points, however, deserve our attention: First, there is no doubt that the fluid injected washed out and carried off the toxins by the way of the different emunctories; secondly, the case teaches us that sometimes a very small quantity of the saline fluid is sufficient to accomplish the lavage of the blood. Finally, it was also evident that the remedy acted as a stimulant to the circulation, to the nerve centers, and as a powerful diuretic.

From the general standpoint I wish to emphasize a fact observed also by many writers and corroborated by my case, namely: the effect of the infusions is marked soon by an elevation of the temperature and acceleration of the pulse; this is the so-called "period of reaction." In cases of profound intoxications the reaction is very pronounced.

If these statements are correct, will they not serve as a means for prognosis? I mean to say that when the immediate reaction of the saline infusion is insufficient or absent, repeated infusions are indicated.

MEMBRANOUS CROUP OR DIPHTHERITIC LARYNGITIS.

By Samuel A. Visanska, Ph.G., M.D.,
Atlanta, Ga.

The subject which I present to you to-day for discussion is one which for many years received little attention at the hands of the medical men, few wishing to advance any new theories as to the etiology of the disease, or recommend a new line of treatment, rather holding themselves in the background and yet being dissatisfied with a large death-rate; but thanks to recent medical science and the improvement in the manufacture of surgical instruments, the death-rate has been brought down to a minimum. It is not my intention to take up all the etiology, symptoms, and treatment, but to bring out the principal points whereby we can distinguish this dreadful and death-dealing disease from the milder form, and then take up the treatment.

The bacteriologist tells us that in treating membranous croup we are dealing with the

Klebs-Loeffler bacillus of diphtheria, so that we will not consider further the etiology except to state that other organisms (the streptococci) are found along with the Klebs-Loeffler. Being called to a case, the first thing we must do is to distinguish between false or spasmodic croup and true or membranous croup, and from the history of the case and symptoms present we are to decide. Spasmodic croup usually comes on at night and suddenly, the cough is dry and barking, there is hoarseness, the child is restless, wants to be taken up and held upon the arm, there is little or no fever, and with proper treatment in from twelve to twenty-four hours the patient is entirely well. In membranous or true croup, of course, the only positive proof would be the finding of the Klebs-Loeffler bacillus, but in laryngeal diphtheria it is difficult to obtain the membrane unless coughed up; constitutional symptoms are usually absent, partly on account of the protection afforded by the very numerous mucous glands and the supply of lymphatic vessels. These vessels connect with the bronchial glands. The main danger comes from the mechanical obstruction to respiration and the extension of the disease to the bronchi.

In uncomplicated cases of membranous laryngitis, excluding the ascending ones, there is little or no fever, the onset of the disease is gradual, and it grows progressively worse; there is hoarseness, and after a short time complete aphonia; the stenosis is at first slight, and present only on inspiration. As the disease progresses the inspirations become more hurried, with dilatation of the alæ nasi, and recession of the chest. The skin and mucous membranes are of a blue or leaden hue, there is great restlessness, the eyes seem to have a bulging appearance, and the face a most pitiful expression, almost begging for oxygen. If nothing is done to relieve the obstruction, in a short time the child dies from asphyxia. Such is the picture usually presented to us at the bedside, and in what way are we to relieve these little sufferers?

When I am called to see a case of croup, unless I find the symptoms warrant a more radical cure, I treat them all alike—that is, for false croup I order the following prescriptions: Calomel, gr. 1-4; salol, gr. 1; soda bicarbonate, gr. 1-2; every half-hour until six doses are taken. For the croupy cough and for its relaxing effect I give apomorphine hydrochlorate, gr. 1; acid. hydrochloric. dil., minims 30; syrup of senega, drachms 6; syrup of prunus virginiana, ounces 1½; and water enough to make 4 ounces. A teaspoonful of this every two hours for a child three years of age is ordered. Or if you prefer one of the ammonia preparations give chloride of ammonium, grs. 64; syrup of ipecac, drachms 3; syrup pruni virginiana, ounces 1½; water, enough to make 4 ounces. A teaspoonful of this every two hours. While some one goes for the medicine I place the child under a tent and pass medicated steam from a croup kettle for an hour or longer. The medication consists of carbolic acid, turpentine, and eucalyptus oil. The carbolic acid is placed in the water, the eucalyptus or turpentine on the sponge in the apparatus. One steaming usually suffices if you are dealing with false croup, but in membranous croup it has to be repeated according to circumstances. The croup kettle is very convenient, can be carried from place to place, and it holds enough alcohol to burn six hours, and by using wood alcohol the cost is little. It possesses a great advantage over the older methods of conveying steam, as the apparatus is brought to the side of the bed and conducts the steam wherever you like. The old methods of conveying steam from a kettle placed on a stove or fireplace are rather inconvenient.

When you return in the morning and find your patient very little or no better, the cough of a deep barking tone, hoarseness progressing, face cyanotic, then what is the next step?* By all means use antitoxin and give a large dose. To a child three years of age I do not hesitate to give 2000 units, and then if it is necessary to repeat the dose I give a smaller one. I want to go on record as saying that if you do not use antitoxin in these cases, you are guilty of criminal negligence. In the meantime the child should receive concentrated nourishing food, and if the pulse gives indications of a weak heart, strychnine and whiskey should be given; it is surprising the amount of whiskey these little patients can stand. If there is constipation repeat the calomel, and use enemata to cleanse the lower bowel.

After employing this treatment suppose we find in place of the membrane becoming absorbed, respiration easier, and hoarseness

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*The editor believes that antitoxin should be used at the first visit.

decreasing, the reverse state of affairs, with symptoms of aphonia, hurried respiration, cyanotic face, retraction of the ribs, etc. What step shall be taken next? We must choose between two operations—tracheotomy and intubation. My mind is so made up between the two that I seldom consider the former, though I bear it in mind in case circumstances call for it. Intubation, or the procedure for the relief of dyspnea depending upon croup, was first employed by Bouchut of Paris, in 1858. He used a hollow metallic cylinder about an inch in length, which was pressed into the larynx and allowed to remain, and had attached to it a silken thread to facilitate its removal and prevent it from passing down into the trachea. The results of Bouchut's cases were not sufficiently satisfactory to recommend its general adoption, and the procedure fell into disuse. In 1880 Dr. Joseph O'Dwyer, of New York, after numerous experiments upon dead subjects in the autopsy room of the New York Foundling Asylum, finally reintroduced this operation as a means of dealing with dyspnea resulting from laryngeal stenosis. Numerous modifications of the tube were made, and it is due to the careful work of O'Dwyer that the operation has become recognized as a legitimate procedure in the treatment of the symptoms arising from laryngeal obstruction

Having performed intubation successfully several times, I can recommend it to every physician, and with proper fitting tubes believe that little injury can be done. With the proper amount of experience the operation is over in a few minutes, the child breathes easier, cyanosis disappears, and in a short while the patient, almost exhausted, falls asleep. Before performing intubation it may be well to give a small dose of chloral and sodium bromide to reduce the amount of spasm sometimes caused by the introduction of the tube to prevent its being coughed up. The instruments I use are the latest made by Ermold, of New York. The tube can remain in the larynx for seven or ten days or longer without any discomfort to the patient, as the longer it remains the more accustomed the larynx is to the foreign body.

After inserting the tube the question arises how to feed the child. If the food is given with the child sitting upright it will run into the larynx, causing the child to cough, and possibly the expulsion of the tube. To overcome this difficulty the head of the child should be held over the nurse's arm, and lower than the body, so that the food will run into the pharynx. Only concentrated food should be given, and even then it should be semisolid. Ice cream is the ideal nourishment, but milk and soft rice, custard and gelatin can be given in this way. Sometimes we will find a few patients so sensitive that food cannot be given in this manner; then we must resort to rectal feeding.

Before the introduction of antitoxin, treatment by inhalation was almost universally adopted, and the fumes most destructive to the Klebs-Loeffler bacilli are those generated by the sublimation of calomel, and even to this day many physicians use it with good results. The child should be well wrapped up so that the face is free, thus exposing the least possible surface of the skin to the action of the mercury. It should be placed in an ordinary croup tent, and the calomel sublimed in such a manner as to fill the tent with fumes. The best apparatus is the steam spray or kettle. The boiler is replaced by a strip of tin or tin-plate, upon which the calomel is placed. Another good arrangement, in case you do not have the kettle apparatus, is to put a small alcohol lamp in the bottom of an ordinary chamber and cover it with a pie pan or strip of metal to hold the powder. Usually forty to fifty grains of calomel is sufficient, and it should be burned every two or three hours, according to circumstances. It is not necessary to awake the child for treatment, and if the smoke causes much cough and irritation, lower the gas flame so that sublimation will take place less rapidly. It usually takes about ten minutes to sublime fifteen grains, and if care be taken that the calomel is pure, there will be very little irritation. This treatment was first suggested by Corbin, of Brooklyn. The attendant should be careful to inhale as little of the vapor as possible, as it is surprising how frequently the nurse becomes salivated, and how seldom the patient is at all affected.

To sum up the treatment of membranous croup we have antitoxin, intubation, steam inhalations, strychnine and whiskey, calomel fumigations, nourishing food, and the keeping of the gastrointestinal canal clean.

66½ Whitehall Street.

ANTAGONISMS OF COCAINE AND MORPHINE, ESPECIALLY THEIR ACTIONS UPON GENERAL METABOLISM, AND THE EMPLOYMENT OF COCAINE IN MORPHINE POISONING.

By Edward T. Reichert, M.D.,
Professor of Physiology in the University of Pennsylvania.

(Continued from p. 462.)

(d) Comparative intensities of the actions of cocaine upon general metabolism and body temperature of normal and morphinized dogs. In the study of the relative intensities of the actions of cocaine upon normal animals and upon the morphinized dogs of the first group, it was shown that after doses of 0.0025 gramme per kilo cocaine was about 11 per cent more powerful in the morphinized animals; and in the second group, after doses of 0.01 gramme per kilo, about 33 per cent more powerful. Taking the results of all of the experiments upon normal and morphinized dogs, it will be found that in the ten cocaine experiments upon normal dogs the mean increase in heat production per kilo of body weight was 1.136 kilogramme degrees, while in the nine morphine-cocaine experiments it was 1.1441 kilogramme degrees, indicating that on an average cocaine is approximately 25 per cent more powerful as a general metabolic excitant in morphinized than normal dogs—this figure, however, being subject to variation in accordance with dose and other conditions.

The mean increase in temperature in the normal dogs after cocaine was 1.17°, and in the morphine-cocaine set 1.33°, showing also that cocaine is more effective in increasing temperature in the morphinized than normal dogs.

Finally the figures show that the temperature coefficients

$$\left(\frac{\text{heat production per kilo of body weight}}{\text{body temperature}}\right)$$

in the two sets of experiments are practically identical—that for the cocaine experiments being 1.12, and for the morphine-cocaine set 1.09. This shows that in both the same quantity of heat is required to be produced to cause a given increase of temperature—in other words, that morphine does not exert any specific actions upon heat dissipation which interfere with the typical temperature-raising actions of cocaine.

The foregoing records show conclusively among other more or less interesting and important facts: That cocaine is a powerful antagonist to the actions of morphine upon general metabolism and body temperature; that the effects of a given dose of cocaine per kilo of body weight upon morphinized dogs vary widely in intensity; that the changes in general metabolism and body temperature are usually very closely related, and that the alterations in temperature depend essentially upon the effects on general metabolism; that cocaine is, as a rule, relatively and absolutely more powerful in its actions upon general metabolism and body temperature in morphinized than normal dogs; and that for some obscure reason the typical effects of cocaine upon general metabolism and body temperature of morphinized dogs may be delayed.

III. A GENERAL CONSIDERATION OF COCAINE-MORPHINE ANTAGONISMS AND SYNERGISMS, WITH ESPECIAL REFERENCE TO THEIR CLINICAL IMPORTANCE.

A number of points of fundamental importance in the application of cocaine to the treatment of morphine poisoning are suggested by the preceding study. Morphine is a powerful depressant to the respiratory center, and almost invariably causes death by respiratory paralysis; therefore, respiration is the one function above all others of grave concern. Cocaine is a powerful respiratory excitant, and usually causes death in man by cardiac arrest. At first thought the conclusion that cocaine could be depended upon as being a prompt, powerful, and reliable respiratory antagonist to morphine is justified. No doubt this conclusion would be well founded did both substances exert their actions chiefly or solely directly upon the respiratory center. There can be no dispute as to morphine being a decided, direct depressant to the respiratory center, and there is no reasonable doubt that it is also an indirect depressant through its actions upon the circulation, general metabolism, body temperature, etc. Cocaine as shown by the preceding records is a comparatively feeble direct excitant to the respiratory center, its great power of increasing respiratory activity being in its indirect actions through the increase of body temperature and general

metabolic activity. It seems obvious from this that if the cocaine be hindered from causing its typical effects on temperature and general metabolism, as in the two experiments of the third group during the first hour after its injection, but comparatively little effect may be looked for upon the respiratory movements. In other words, its value as a respiratory excitant in morphine poisoning depends probably chiefly upon the extent to which it overcomes the depressant actions of morphine upon body temperature and general metabolism. In fact, the more careful and detailed the inquiry into the antagonistic actions in general of these drugs, the more likely it seems that the antidotal values, as a whole, hinge mainly upon these actions.

The records of the cocaine-morphine experiments show that the effects caused by doses of cocaine of the same size in relation to body weight vary widely in intensity, and that the best results were obtained by small to moderate doses. One of the chief causes of this variability is associated with but not entirely dependent upon the motor condition of the animals—that is upon whether or not there existed the motor quiet of morphine or the motor excitement and attendant conditions of cocaine, or both, and the degree of each. During the hours after cocaine, when the dogs were quiet, heat production was low, often below the normal; while during the hours of restlessness heat production was high, the extent of the increase being in close relationship to the degree of motor excitement. In the nine experiments upon the morphine-cocaine animals the dogs were recorded as being *quiet* during fifteen of the twenty-seven hours after the injection of the cocaine. During seven hours of the fifteen heat production was less than during the hours immediately preceding, the average being 19.8 per cent less than the mean of these hours; and during the remaining eight hours the mean increase was but 21.3 per cent above the average of the hours immediately preceding. On the other hand, during the hours of motor agitation, when the dogs were *restless,* the mean increase was 93.3 per cent, and when they were *very restless* the mean increase was 304.9 per cent. It is obvious from these figures that the power of cocaine to increase thermogenic activity in morphinized dogs depends chiefly upon its ability to supersede the motor quiet of morphine by muscular excitement.

It is also manifest that the effectiveness of cocaine depends in a large measure upon the size of the dose, and does not necessarily increase in proportion to the dose. The records of the experiments in which the doses were 0.0025 gramme and 0.01 gramme per kilo, respectively, show that the results were decidedly better than when the dose was 0.02 gramme per kilo. Even in Experiments 8 and 9, in which the quantity of morphine was doubled, the effects of 0.01 gramme per kilo were more powerful than in the two experiments in which the cocaine was double and the morphine only half. Small to moderate doses are therefore more effective than large doses, and up to doses of moderate size the intensity of the cocaine actions increases approximately with the dose, other things being equal.

While the changes in temperature and general metabolism are, as a rule, very closely in accord, they are not invariably related either qualitatively or quantitatively. Of the total twenty-seven hours of the experiments upon morphinized dogs after the injection of the cocaine, during only three hours were the curves not qualitatively the same—in Experiment 1 the temperature *fell* during the first hour after cocaine, while heat production *increased,* and *increased* during the third hour while heat production *fell;* in Experiment 6 during the first hour the temperature *increased,* while heat production *decreased.* With these exceptions the curves rose and fell together, although not always in proportion. Instances occurred in Experiments 3, 4, and 9 in which there was a marked absence of proportional relationship: thus, in Experiment 3, during the first hour after cocaine, heat production was increased 1.81 kilogramme degrees per kilo of body weight, but the temperature rose only 0.35°, or about one-fourth of the average for a like increase of heat production; in Experiment 4, during the same hour, heat production was increased 0.25 kilogramme degree per kilo, and the temperature was increased 0.88°, or 0.65° beyond the average for the same increase of heat production; in Experiment 9, also during the first hour after cocaine, heat production was increased 0.59 kilogramme degree per kilo, and the temperature was increased 0.8°, or an excess of 0.25° of what is ordinarily observed. While, therefore, the changes in heat production and body temperature may not during exceptional hours be related either qualitatively

or quantitatively, as the case may be, they are nevertheless so closely related, as a whole, that alterations in temperature may be regarded as being a fairly reliable index of the extent to which cocaine is counteracting or superseding the depressant actions of morphine upon general metabolism and temperature. Moreover, as previously stated, it is by no means unlikely that more detailed investigations will show that the effects upon temperature at any given time may be taken as indicating the general antidotal effectiveness of cocaine at that time.

The delay in the appearance of the typical effects of cocaine upon heat production and body temperature is of more than passing interest because chiefly of the danger in such cases of over-cocainization, and of the consequent intense, and possibly fatal, activity as the morphine effects wear off and those of cocaine are developed. This danger is indicated in the results of the experiments of the third group, and also possibly in the case of poisoning treated by Dr. Barnes *(loc. cit.)*. It will be observed that when the thermogenic effects are delayed the excitomotor actions are also held in abeyance, and the danger to be guarded against is not in the thermogenic effects but in the latter. In normal animals heat production and body temperature after cocaine begin increasing immediately or within a few minutes, and after doses ranging from 0.0025 to 0.01 gramme per kilo they reach their maxima during the first hour, or not later than the early part of the second hour; but in the morphine-cocaine experiments of the third group the cocaine excitation, thermal and motor, practically began at a time when in normal dogs such effects were passing off, or had about reached their maxima. Thus, in normal dogs by far the greater portion of the increase of heat production and temperature occurred during the first hour after the cocaine; on the other hand, in the two morphine-cocaine dogs the cocaine effects during the first hour after cocaine were comparatively feeble, during the second hour they were marked, and during the third hour still more pronounced—the reverse of what is observed in unmorphinized dogs. In Experiment 6 the actions of cocaine during the first hour were not sufficiently powerful to entirely counteract the depressant effects of the morphine; during the second hour heat production was increased to 5.7 per cent above the normal; and during the third hour the increase amounted to 90.8 per cent. In Experiment 7 the cocaine was again ineffective in completely counteracting the morphine depression during the first hour; but during the second hour heat production was increased 37.6 per cent, and during the third hour 115.9 per cent. It is probable that in both experiments, as before stated, a further increase occurred subsequent to the periods of observation. The comparatively feeble actions of cocaine during the first hour in both experiments, and during the second hour in Experiment 6, may probably be satisfactorily accounted for by the assumption that in these instances the depressant actions of the morphine were unusually severe; but it is not possible to explain, except upon mere hypothesis, the decided actions of the cocaine during the third hour—a period during which in the normal dog heat production, after such a dose, is subnormal, or at least falling rapidly. It is obvious that the cocaine was neither eliminated nor destroyed, but was for some obscure reason rendered comparatively inactive. Such a phenomenon may occur in the human being, with its attendant dangers, and is, therefore, to be guarded against by a cautious administration of the cocaine.

The depressant effects of morphine upon the circulation are not of themselves of sufficient gravity to be of much concern, excepting in so far as they weaken the already depressed respiratory center; even in the third stage of morphine poisoning the circulation possesses adequate strength to carry out its functions if respiratory activity can be maintained. In another research *(Therapeutic Monthly,* May, 1901) it has been shown that morphine during the greater part of the second stage of poisoning exerts triple actions upon the circulation, stimulating the cardioinhibitory apparatus, directly depressing the heart, and stimulating the vasomotor mechanism. As the result of these conjoint actions the arterial pressure falls, and the pulse may be full and lessened in rate, or feeble and frequent. During the third stage there is depression of the cardioinhibitory apparatus, heart, and vasomotor apparatus, giving rise to low arterial pressure, and to an infrequent and full pulse, or to a frequent, feeble pulse. Cocaine in therapeutic doses is a cardioinhibitory, cardiac, and vasomotor stimulant. The cardioinhibitory excitation tends

to be transient; and the increase in arterial pressure is due to both cardiac and vasomotor excitation, especially to the latter. During the last part of the second stage, and during the whole of the third stage of morphine poisoning, the direct actions of cocaine in therapeutic doses antagonize the direct depressant actions of morphine upon the heart and the vasomotor apparatus. Large doses of cocaine may lessen arterial pressure, and are, therefore, to be guarded against. A point of the greatest importance in this connection is the tendency of both morphine and cocaine in some individuals to cause syncope. This erratic action of cocaine is by no means rarely observed. Boar (*Gaz. Heb. de Méd. et de Chir.,* Sept. 15, 1901) has found in a study of acute cocaine poisoning that the gravity of the symptoms is in relation to the tendency to syncope. Whether or not cocaine is likely to act in this way in morphinized individuals remains to be determined, but all indications point affirmatively, and therefore to its cautious administration. Moreover, cocaine in small doses exerts some action as a stimulant upon the cardioinhibitory apparatus, which is worthy of inquiry, but during nearly the whole of the second stage, and during the third stage, of morphine poisoning, the cardioinhibitory apparatus is depressed. Another synergistic action of practical importance is the excitomotor action, although this is of far less account in the human being than in the lower animals generally. During the second and third stages of morphine poisoning there exists a combined paralytic-convulsant condition in which during the second stage the convulsant moiety is masked by the paralyzant; and during the third stage the reverse. In my studies of the actions of powerful excitomotors (cocaine, strychnine, picrotoxin, etc.) upon morphinized dogs, it has been found that during the second and third stages of the poisoning the convulsant action of the morphine if latent has been developed, and if present has been intensified, so that a non-lethal dose has been rendered lethal, and the fatal issue of a lethal dose hastened. In man, the convulsant moiety is usually so unimportant that but little anxiety need exist of such a danger, unless the dose of the excitomotor be unnecessarily large, or the individual be very susceptible.

The most important of the many facts of physiologic and therapeutic interest elicited by the foregoing study may be summarized as follows:

1. That the antagonistic actions between cocaine and morphine are of a powerful and wide-spread character, extending to almost every function involved, and are, therefore, of such a character as to justify the conclusion that one may be regarded as meeting the important indications of a successful antagonist to the other.

2. That the only important synergistic actions are as excitomotors, and their tendencies in some individuals to cause syncope.

3. That cocaine is not only sufficiently powerful to successfully antagonize the profound depressant actions of morphine upon general metabolism and body temperature, but as a whole is more powerful, both relatively and absolutely, in morphinized than normal dogs.

4. That the increase in heat production caused by cocaine is due in part to a direct excitation of general metabolic activity, chiefly by motor excitement; and that even in the absence of muscular excitement cocaine may fully counteract the morphine depression.

5. That the effects caused by a given dose of cocaine per kilo of body weight vary in intensity within wide limits.

6. That the changes in body temperature following the injection of cocaine are, with few exceptions, closely related quantitatively and qualitatively to the changes in general metabolism, and are, therefore, a fairly reliable index of the intensity of the cocaine actions—in other words, of the extent to which the cocaine is counteracting or superseding the depressant actions of morphine.

7. That the temperature coefficients in normal and morphinized dogs after cocaine are practically identical, showing that morphine does not exert any specific actions on heat dissipation which interfere with the typical temperature-raising actions of the cocaine.

8. That the typical cocaine effects may be delayed in the morphinized animal, and then appear with marked intensity, as shown by the increase of heat production, body temperature, and by motor excitation at a time when in normal animals they are lessening rapidly. Under such conditions the dangers of morphine poisoning may be superseded by those of cocaine poisoning.

9. That owing to a coexistent paralytic-

convulsant state in the morphinized animal, the administration of cocaine or other powerful excitomotor may develop or intensify the convulsant moiety, and thus render a non-lethal dose of morphine lethal, or hasten death when the dose is lethal. In man, the convulsant element is almost without exception so unimportant that there is probably little or no danger of this kind except after unnecessarily large doses of the excitomotor, or in exceptional individuals in which the excitomotor action of morphine is marked.

10. That the value of cocaine in morphine poisoning probably depends chiefly upon the extent to which it antagonizes the depressant actions of morphine upon general metabolism and body temperature.

11. That the power of cocaine as a respiratory stimulant depends almost solely upon its actions upon the heat mechanism.

12. That owing to the tendency of cocaine to cause syncope in certain individuals, to its excitomotor action, to the marked variability in the intensity of the effects caused by a given dose per kilo of body weight, to the occasional delay or latency in the typical actions of cocaine in morphinized animals, and to the fact of the greater value of small to moderate doses in morphinized dogs, it should be administered in morphine poisoning in man in small doses cautiously repeated.

TREATMENT OF PNEUMONIA.

S. L. BURT after a long paper in the *Medical Record* of April 26, 1902, adds the following recapitulation: Pneumonia primarily owes its shortness and self-limitation to the perishability of its microparasite; the type of the disease depends upon the condition of the individual; pneumonia simply as pneumonia requires no interference; diplococci thrive best at the normal human temperature; fever inhibits the growth of the parasite and is therefore beneficial; high fever indicates extensive infection, meantime varying degrees of reactive ability; low fever either inability to react or else moderate infection; specific medication is unnecessary in pneumonia, if not pernicious; it is imperative to disinfect dejecta and expectoration; aconite and its congeners are injurious; bleeding is seldom required; opium, checking renal activity, in large doses is contraindicated, in old persons opium is exceedingly dangerous; oxygen is useful but not indispensable; alcohol is valuable as food, and it conserves energy; strychnine, ammonia, alcohol, and nitroglycerin in large doses, as stimulants, should be reserved for emergencies; subcutaneous infusion of a physiological saline solution is invaluable for renal elimination of poisonous accumulations; last, though not least, specific remedies at best are but makeshifts, prevention of infection is the desideratum.

THE USE OF CEREUS GRANDIFLORA AS A HEART TONIC.

The *Journal de Médecine de Paris* of April 6, 1902, states that cereus grandiflora is an energetic heart stimulant, particularly useful in cases of aortic insufficiency and dilatation. It is also very useful in nervous palpitation, and in some instances acts very much better than digitalis. Its lack of toxicity permits its long administration, and Huchard has recommended that it be given in the form of the fluid extract in the dose of 15 minims a day; in the form of the tincture in the dose of 20 to 40 minims; and the following prescription is suggested in cases of cardiac irritability dependent upon intestinal disorder:

> Fl. ext. cereus grandiflora,
> Tincture of nux vomica, āā 3 drachms;
> Essence of pancreas, 3 ounces.
> A teaspoonful after each meal.

When there is anasarca and edema of the lower extremities, the following prescription may be given:

> Fl. ext. cereus grandiflora, 3 drachms;
> Fowler's solution, 40 drops;
> Compound tincture of gentian, 3 ounces.
> A teaspoonful three or four times a day.

In cases where there is circulatory feebleness as the result of sexual excess:

> Fl. ext. cereus grandiflora,
> Tincture of nux vomica, āā 3 drachms;
> Extract of damiana, 4 drachms;
> Glycerin, 1 drachm;
> Compound tincture of gentian, 2 ounces.
> A teaspoonful after each meal.

In uterine affections such as endometritis and leucorrhea with circulatory feebleness, the following may be given:

> Fl. ext. of cereus grandiflora,
> Ergotine, āā 3 drachms;
> Glycerin,
> Tincture of gentian, āā 2 ounces.
> A teaspoonful three or four times a day.

The Therapeutic Gazette

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Editorial communications should be addressed Northwest Corner Eighteenth and Spruce Streets, Philadelphia. Articles intended for the Original Department of the GAZETTE will be accepted only with the understanding that they are contributed to it exclusively.

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Leading Articles.

THE HEMOGLOBIN AND MERCURY TEST FOR SYPHILIS.

Many months ago we called attention in the editorial columns of the GAZETTE to the test for syphilis which was proposed by Justus. It will be remembered that this clinician asserted that if the hemoglobin is estimated at the end of twenty-four hours after a vigorous inunction of mercurial ointment, a drop of from ten to twenty per cent in its amount will occur as compared to its richness previous to the rubbing in of the mercury, provided that the patient is syphilitic; and he also asserted that this change never takes place in persons who are not suffering from syphilis, attributing the reaction to the destructive effect of the mercury on some red blood-corpuscles that are already weakened by disease. Since that time a number of other clinicians have studied this so-called test, with results which have led them to believe that it is not of any real diagnostic or therapeutic value. Amongst others Brown has investigated this question, as have also Ayers and Jones. The most recent contribution on this subject with which we are familiar is that of the late Dr. William E. Huger, Jr., of Charleston, South Carolina, which has been published in the *Philadelphia Medical Journal* of May 10, 1902. While his cases were not very numerous, the conclusions he reaches confirm those which we have just mentioned, namely, that a diagnosis can in no way be based upon this reaction.

A WORD AS TO RATIONAL THERAPEUTICS.

There has recently appeared in the *Boston Medical and Surgical Journal* of May 8, 1902, a brief paper by Dr. B. W. Loomis, of Syracuse, N. Y., in which he discusses the influence which is being exercised upon therapeutics by the introduction of new remedies prepared by the synthetic chemists and the combination of older remedies placed upon the market by manufacturing druggists. He emphasizes the very important fact that there is a danger of the physician following the advice of the purveyor of these drugs rather than his own therapeutic skill, and instances cases in which careless physicians have come to administer remedies solely on the strength of advertisements advocating their employment without giving them careful examination and the question of the treatment due consideration. In the course of his article Dr. Loomis publishes what seems to us sound therapeutic aphorisms, and we append them below. He believes that the essentials of a sound therapeutic method are as follows:

1. Keeping in mind the tendency of self-limitation of pathological processes and the possibility of cure as a result of natural forces, never prescribe a remedy that will interfere with, or upset the conservative efforts of, the organism.

2. Keep the problem of treatment as simple as possible by the exhibition of few remedies, well selected.

3. Bear in mind the possibility of aggravating existing pathological conditions and introducing new ones, by injudicious or too heroic methods of treatment.

4. Remember that the benefit to be expected from remedies is generally offset or

neutralized when a large number of remedies are exhibited at the same time.

5. Try to remove the cause—this presupposes a careful study of the case, rather than a hasty prescription for this, that, or the other symptom.

6. Do not forget that most medicines are two-edged swords—if a medicine does no good it is likely to do harm.

7. Prescribe for conditions, not diseases.

8. When necessary, hit hard, but not too often.

9. Watch constantly for symptoms that may be the result of remedies prescribed for the relief of other symptoms.

FACTS IN REGARD TO ANESTHETICS.

In the editorial pages of the THERAPEUTIC GAZETTE we have on a number of occasions emphasized our belief in the fact that fright is an exceedingly important factor in the production of untoward effects from anesthetics, and that it not infrequently very seriously modifies the whole condition of the patient during anesthesia and convalescence. We are, therefore, interested to note that in the *Medical News* of April 19, 1902, Dr. Maduro again brings forward this subject, and insists upon the importance of assuring the patient that deep regular breathing will produce good results, and that there is no cause for alarm. Further than this, he especially recommends that in plethoric persons, in whom the respiration is apt to become embarrassed, it is a mistake to let up on the ether under these circumstances, for in reality the drug ought to be pushed at this time, since by this means the spasm which is the cause of the disturbed respiration is speedily overcome. It is his experience, also, that plethoric persons take nitrous oxide gas very well, but ether rather poorly, unless a temporary employment of chloroform is first resorted to, so that he has been in the habit of starting the anesthesia with nitrous oxide, later employing a little ether, and again employing chloroform, and then perhaps returning to the ether. He believes that changing from one drug to another, in this type of patients in particular, is distinctly advantageous, and it seems to us that his view is clearly rational, for doubtless during many surgical procedures a variation in the use of pain-relieving drugs is advisable, since each exercises a dominant influence upon different portions of the system aside from its anesthetic properties. So, too, in cases which tend to vomit early in anesthesia, there can be no doubt, as Dr. Maduro states, that pushing the anesthetic is often distinctly advisable.

THE TREATMENT OF PNEUMONIA.

At a recent meeting of the West Branch Medical Society of the State of Pennsylvania, held at Lock Haven, Dr. Bell, of Newbury, contributed an interesting paper to the Proceedings upon the treatment of this grave disease. While on the one hand he did not advocate any particular plan of treatment, he did on the other emphasize the importance of refraining from the administration of the various coal-tar products for the relief of pain and fever, and asserted that in his opinion they had added very materially to the mortality of this malady. While there may be a few isolated instances in which it is advisable to administer them in croupous pneumonia, we are entirely in accord with Dr. Bell in his opinion that in the vast majority of instances their employment exercises a deleterious influence.

A very important point to be considered when called to see a case of this disease is the age of the patient, his vitality, and the ability which he seems to possess to eliminate from his system the poison of the malady. While in some instances there may be marked consolidation of the lung, physicians of experience well know that the most desperate cases are not infrequently those in which the pulmonary symptoms are for a number of days obscure, while the nervous and circulatory symptoms are very well marked. There can be no doubt that the functional activity of the kidneys has much to do with the preservation of the patient's life. When these organs are diseased, or temporarily lacking in functional activity, poisons rapidly accumulate in the body which speedily overwhelm the heart and nervous system, whereas in those instances in which free diuresis is present, elimination goes on so rapidly that a profound toxemia cannot develop even although the infection is moderately severe. Nor is it sufficient in many of these cases to determine that the urine does not contain albumin or casts. Where there is any doubt as to the eliminative

ability of the kidney, estimations of urea should be made, and if this substance is eliminated in smaller percentage than normal, diuretics and other measures for increasing kidney action should be employed.

In connection with these remarks a letter published in the *Glasgow Medical Journal* for April, 1902, by Dr. Gairdner, of Edinburgh, seems to us of very considerable interest. He does not have much confidence in digitalis where the fever is high, nor does he believe that massive doses of this drug are wise. But he distinctly controverts a view expressed by a contributor to that journal that digitalis is a poison in pneumonia. The one drug which he does believe is exceedingly dangerous in cases of pneumonia is opium, and although he is aware that men of great eminence have taught otherwise, he is well satisfied that his conclusion in regard to this matter is correct. Sir William believes that in pneumonia, far more than in pleurisy and even more than in bronchitis, the safety of the patient depends upon the respiratory nerve centers being kept wide-awake, and he thinks that the quickened respiration should not be interfered with by the employment of a respiratory depressant, nor should this drug be used and so prevent the bronchial tubes from expelling as rapidly as possible any secretions which may form in them. That Sir William is correct in his opinion in regard to this matter no one can doubt; for while in the first stages of pneumonia we are sometimes tempted to administer Dover's powder for the relief of pain, it is an undeniable fact that after the first day or two the administration of any drug of this character is always useless and sometimes harmful.

It is much to be regretted that we have at this time few reliable statistics in regard to the mortality of this disease. Public health statistics give an erroneous idea of its true mortality in that physicians frequently report a death as being due to pneumonia without specifying whether it is broncho- or a croupous pneumonia; and worse than this, pulmonary edema and suffocated catarrh are frequently reported as cases of pneumonia. As a result definite conclusions as to the mortality of each one of these affections are difficult to reach. Again, statistics which deal with the mortality of pneumonia should, if possible, give information as to the condition of the kidneys and the condition of the heart prior to the onset of the disease, and also the age, occupation, and habit of the patient; for these four factors are of the greatest possible importance in determining the ultimate result in all cases. An alcoholic habit or advanced years are notoriously fatal factors in this malady, while early youth, which does not provide immunity, very materially diminishes the mortality, so that while bronchopneumonia is an exceedingly fatal disease in children, they usually recover in croupous pneumonia.

Another point which is often not considered by a physician in studying these cases is the possibility of the patient suffering not only from the invasion by the pneumococcus, but also by the development of other infections simultaneously or subsequently, forming what Flexner has so well called "terminal infection," the patient dying not so much from the effects of the pneumococcus as from the evil influences of other microörganisms which rapidly develop in his system.

THE USE OF SOLANUM CAROLINENSE IN THE TREATMENT OF EPILEPSY.

It is interesting to note that a paper upon this subject has appeared in the *Philadelphia Medical Journal* of May 10, 1902, by Dr. M. C. Thrush. The conclusions which he reaches are that the drug seems to be of some value in modifying the severity of the attacks and in diminishing their frequency. Some years ago the writer of this editorial employed this drug in a considerable number of cases, and while at first it seemed to possess some antiepileptic power, in the end it was concluded that the apparent improvement might be as dependent upon coincidence as upon any action of the remedy. The number of cases in which it was tried was not, however, so large as that reported by Dr. Thrush.

SUTURE OF THE INTESTINES.

The conditions requiring end-to-end suture of the intestines are so immediately threatening to life, and arise so frequently in surgical practice, that it is scarcely to be wondered that Stirling, in a very complete *résumé* of the subject of intestinal suture,

has been able to describe twenty-one methods of sewing. The best of these, however, are modifications of the Lembert suture, which, after three-quarters of a century, is still the most popular method of uniting divided gut.

As a means of hastening the procedure of end-to-end union, or of facilitating it, when the parts are so deeply placed that a thread could not easily be applied, there are certain mechanical aids, of which Stirling mentions twenty-nine.

A third method of accomplishing union is by invagination. The ingenious method of Maunsell is that which is given preference in practice.

Senn has pointed out that no surgeon should venture upon an end-to-end suture of the gut without first having prepared himself by extensive practice on the lower animals and upon cadavers.

The Lembert suture, which has for its end the approximation of the serous coats, should, if applied properly, include the serous, muscular, and fibrous coats of the bowel, but should not penetrate the mucous coat. In actual practice this is extremely difficult, as pointed out by Connell. Efforts in that direction are so likely to omit the fibrous coat, the only one in which the suture is firmly gripped, that many deaths have resulted, improperly applied threads having torn out, permitting leakage and subsequent peritonitis. There seems to be very little danger of leakage through the suture track, even if this does penetrate the mucous coat, and better results would probably be obtained were an attempt made to drive the needle through all the coats of the bowel, since thus the stronger layer can be quite surely included, and there would be no danger of the stitch giving way.

The success of the Connell suture, which is tied on the inside, and includes all the coats of the gut, quite clearly demonstrates the innocuousness of this complete perforation.

The Lembert suture should take up a fold of the intestine one-eighth inch wide, leaving a margin of peritoneum between the point of exit and the divided edge of the gut of one-eighth inch. A similar fold is picked up on the opposite side of the wound. On tying, the serous membrane is inverted, and the peritoneal surfaces are held in close contact. Dupuytren modifies Lembert's suture by making it continuous. The ordinary stitch is interrupted. Cushing employs a right-angled quilted continuous suture. The needle is inserted parallel to the wound, instead of at right angles to it. This is a very admirable modification, rapid and safe. On tension it is less likely to leak than is either the continuous or interrupted Lembert.

Of the various mechanical aids, there have been used india-rubber rings, catgut mats, decalcified bone bobbins, bone cylinders, vegetable buttons, metallic rings, bone plates, vegetable plates, rawhide plates, cartilage plates, gelatin plates, rubber balloons, forceps, and bone couplers. Of these the only one which has been given general approbation is the Murphy button. This has proved itself so serviceable that it now is a part of the armamentarium of every operating surgeon. As a help to suture, the O'Hara forceps is likely to become equally popular.

By whatever means an end-to-end suture of the intestines is accomplished, there is always turned in more or less of a diaphragm. When the Murphy button is employed, a comparatively small lumen is left for the onward passage of the intestinal contents. It follows that as a part of the preliminary treatment, when this is practicable, the intestinal contents should be rendered fluid. Suture experiments upon dogs often result fatally because of acute impaction of solid masses in the intestine at the site of the suture. The same accident has happened in the human. The main advantage of end-to-end suture without the use of any appliances other than the needle, thread, and forceps is incident to the fact that this obstructing diaphragm may be reduced to a minimum. In the hands of a surgeon who has become skilful by experimenting and clinical practice, end-to-end suture by nearly any of the methods can be accomplished in ten to fifteen minutes, and except where time is a matter of vital import, or where the parts are so placed as to be inaccessible to suture, it is likely that the needle and thread will remain the method of closure most practicable and most used.

THE TREATMENT OF CANCER.

It is, perhaps, mainly dependent upon the belief that with the discovery of a distinct cause for cancer, an efficient remedy might

be found that the profession has welcomed the belief, not sufficiently justified by the evidence put forth, in the parasitic etiology of cancer. The arguments advanced to prove this theory, both from the microscopical and experimental standpoint, are highly suggestive, though they are not convincing, but when contrasted with the evidence against the parasitic theory they are likely, to an unprejudiced mind, to fall lamentably short of proving the case.

Cancer is essentially a disease of advanced life. The morphology is unlike that of infiltrations caused by the known parasites. The disseminations from the original focus exhibit the morphology of the original lesion in a manner not suggestive of parasitic infection.

The intrinsic theory as expressed by Allen explains carcinoma "on the basis of a confused imitation of the embryonic process of gland formation, whilst sarcoma resembles the act of repair persisting at some one stage or other, the growth in either case being without obvious purpose, without limit, unfederal, evil." The entire body being descended from a single cell, each portion exhibits conformations and properties incident to descent of specialized offspring of that cell. The growth and development is under a simple control, and the marvel lies rather in the persistence of this control than in the occasional and exceptional departures from it as expressed by the irregular growths of cancer. "Cancer growth is essentially a local process, due to loss or perversion of the local controls, or of the local federal bond. Now and then multiple primary cancers occur. It is clear that the loss or perversion of control may be multiple, or may even be widely spread in some particular tissue, such as bone or skin."

The cancer formation may be ascribed to increased activity of the cells. This belief by no means negatives the idea that a cure for cancer may be found. Thus there are many instances of spontaneous retrogression, in some there has been disappearance of the cancer after ovarian operations, some have been cured by the *x*-rays, others by caustics, particularly arsenic, and by Coley's injections. A great many have been cured by wide excision.

The influence of heredity is universally acknowledged as a potent factor in the development of cancer, though the various statistics collected on this subject are somewhat invalidated by Snow's study of the matter. Out of 1075 cases of malignant diseases, he found a family history in 15.7 per cent, but in 78 healthy people he obtained a similar history in a rather larger percentage. The influence of local irritation is, however, not questioned. Beyond this there seems nothing in the environment, habits, life, or previous history of diseases which bears a distinct relation to the development of the cancer.

Statistical study apparently shows an enormous increase of cancer in recent years. Allen's communication bearing on this subject (*Australasian Medical Gazette*, April 21, 1902) is of extreme interest and importance. He notes that the Australian death-rate from cancer for every 10,000 living has risen in the last thirty years from 2.75 to 5.72—that is, the recorded death-rate from cancer has somewhat more than doubled in males and somewhat less than doubled in females. Cancer is, however, distinctly a disease of later life, increasing in prevalence as age increases beyond its middle term. In Australasia there has been a striking increase in the number of old people—that is, of persons of the cancer period—both an absolute increase, and an increase in proportion to the whole population. This explains a large part of the increase in cancer. The death-rate from cancers in persons under twenty-five shows no increase since 1880. Moreover, among the external cancers which are easily recognized, those of the face and lip in males appear to be less frequent than formerly. Cancer of the breast in women has also decreased, and uterine cancer is only slightly increased. The apparent increase of cancer in old women of seventy-five and upwards is doubtless due to more regular medical examination, better diagnosis, and more explicit registration.

Among the interesting theories advanced as to the causation of cancer, that put forward by Braithwaite, to the effect that the disease is to a degree dependent upon the consumption of salt, is entertaining rather than instructive, since it is evidently based upon an original misconception. Braithwaite assumes that the Jews are but little subject to cancer, arguing correctly that they eat but little salt pork, hence that a diet deficient in salt is unfavorable to malignant growths. It is probable that the Jews are about as subject to cancer as are any other people living under similar hygienic conditions.

Morris advances a powerful argument against the infectiousness of cancer when he says that he has never seen or even heard of a surgeon having contracted the disease in the course of his professional life, though brought in constant, intimate contact with hundreds of such cases. As opposed to this, there is probably not a physician or surgeon who fails to remember cases of syphilis contracted by infection incurred during the practice of medicine and surgery.

At the present time the only hope of betterment in the statistics of cancer treatment lies in the general recognition of the fact that most tumors in persons past middle life are malignant, and that the best hope of a radical cure lies in an immediate and entire removal. It is probable that every cancer has a curable stage—there is a time when it and all its extensions can be entirely removed by operation. It is certainly true that a very much larger percentage of cancers are seen by the surgeon in an early period now than was the case ten years ago. It follows that the huge tumors and destructive ulcerations which formed such a prominent feature of the illustrations of the older text-books are now rarely seen in clinical practice. There are, however, many doctors who still believe that a tumor should not be operated upon until its malignancy is clearly and absolutely established. At such a time the operation, in so far as its life-saving functions are concerned, is mostly futile.

Even when removal of the growth can no longer be considered, there are certain palliative measures which are worthy of thought. Czerny has reported a number of cases, which had been considered inoperable, that were successfully treated by non-operative means. The objects to be attained by the treatment of the inoperable cases are the prevention of bleeding, relief of pain, and the control of the putrid discharges. Hemorrhage, even though slight but frequently repeated, is rapidly exhausting. When it cannot be controlled by the dressing, ligation of the arterial supply is an operation to be considered, and one which has been followed by excellent results, especially in lingual cancer. Curettement and cauterization are also commended by Czerny as a means of lessening hemorrhage, or even of accomplishing cure. Of the chemical caustics, he finds zinc chloride solutions, 20 to 50 per cent, most efficacious. The cancerous cavities are packed with gauze soaked in these solutions. He instances some cures by this treatment following curetting and cauterization. Formalin and arsenic seem less efficacious, and cause much more pain. By the *x*-ray, epitheliomata, sarcomata, and carcinomata have been greatly benefited. The pain is sometimes relieved at once. Some cases have been apparently entirely cured.

PLASTER-OF-PARIS BANDAGES.

Under the alluring title "An Evening with Plaster-of-Paris Bandages," a demonstration was given at the Jefferson Medical College Hospital on June 5, 1902, by the members of the American Orthopedic Society to some invited guests, which, from some standpoints, was highly instructive.

The first question taken up was as to the best method of removing plaster-of-Paris bandages. A number of ingenious devices were shown. One consisted of a forceps provided with a circular saw worked with a ratchet. The consensus of opinion was, however, that nothing could take the place of a well-tempered, sharp jack-knife. Ridlon, indeed, has gone to the trouble of having a special steel made in Sheffield, and he exhibited a knife of this kind. He has used this knife for many years. It is so little worn that it is likely to last indefinitely. He dwelt particularly upon the temper of the blade, and held that the temper of ordinary steel makes the knife quite useless in plaster-of-Paris work. A valuable adjunct to either the knife or to other cutting instruments is a pair of forceps, the handles of which, when pressed together, force the plaster open by means of two flat blades.

To render the removal of plaster-of-Paris easy, Dr. Wm. B. Hopkins has devised an extremely ingenious procedure. He employs a rubber band from the middle of which rises a vertical ridge. The band is applied to the surface of the limb. The plaster is then put on. The projecting vertical ridge has the effect of squeezing out the plaster in that portion of the bandage immediately overlying it. This makes the plaster more easily cut. When the band is withdrawn there is left a narrow channel into which the blade of a forceps or of a knife can readily be slipped. Traction on this band lessens its various diameters, and

thus enables the operator to remove it easily. When it is placed over a sharp angle, a piece of waxed paper is put over it to prevent the plaster from adhering, and its removal is thus facilitated.

In regard to the manufacture of plaster-of-Paris bandages, Dr. Robinson showed a simple device by which these may be freshly made as rapidly as they are required. It consisted essentially of a hopper and two spindles. As the bandage was rolled from one spindle to the other the plaster was fed to it from the hopper.

Dr. Sayre gave a demonstration of the application of the plaster-of-Paris bandage in cases of Pott's disease. The demonstration was interesting from the fact that it showed the methods in vogue ten years ago to be still unchanged. He asserted that gauze shrinks, and hence that bandages made of this material, even though applied carefully, may become too tight. He called particular attention to the necessity of modeling the plaster in at the waist. This insures a cleaner support from the shoulder to the hips. He noted that if the jacket were cut out too high in the inguinal regions, it predisposed to the development of hernia.

Lovitt exhibited a light portable iron frame which enabled him to apply the principle of hyperextension in the use of plaster-of-Paris bandages for the cure of deformity incident to Pott's disease. He insisted upon the principle that hyperextension should be applied at the site of the deformity. This, he declared, was better than applying it to the whole spine. He accomplishes his end by placing the patient prone upon a lacing of ribbons hanging from his frame. The plaster is then applied from below up to the site of the deformity. When the plaster has hardened, the patient's pelvis and lower torso, incased in the plaster, are strapped to the main part of the frame, whilst the upper part of the body is lifted by means of a hinged lever, suspending the patient from the shoulders. The plaster jacket is then completed.

Weigel exhibited a very admirable jacket covered with stockinette, made upon a basis of crinoline combined with a certain amount of stiffening. This stiffening he believes to be highly desirable. By adding salt to the water he has the plaster set at once. Instead of contracting, he says, plaster-of-Paris expands in the process of hardening, and exhibits a tendency to become looser.

Sheldon applied with great deftness a plaster-of-Paris bandage to demonstrate his method of securing this support in places where the conditions are such that the bandage is likely to slip. He noted that in infantile equino-varus the whole plaster case is likely to come off. This tendency he counteracts with two adhesive strips. One of these strips he fastens to the foot, and then runs it up the leg in such a way that it tends to correct the deformity. The other strip is fastened to the first strip and is allowed to hang from the sole. The plaster-of-Paris bandage is then applied. After one or two layers have been put on, the end of the adhesive plaster is brought up and incorporated with the plaster as it is bound about the leg. This principle is applicable to all special parts of the body which by their shape make the slipping down of the plaster bandage possible.

Steel called attention to the great value of galvanized wire gauze strips, as means of reënforcing plaster-of-Paris and of rendering the latter more efficient in the fixation of club-foot splints. He also noted that this gauze can be molded and adapted to suit almost any part of the body. The edges of the gauze may be bound with adhesive plaster.

Hosmer showed a device by means of which he could take plaster-of-Paris molds of clubfoot in the corrected position. The device consisted essentially of a wooden box provided with a number of pressure bars and screws.

Ruhe showed an ingenious device by which elastic traction could be secured in the treatment of clubfoot. This consists in making a loop on the plaster-of-Paris bandage originating in the portion applied above the ankle, and incorporating in that part applied about the foot a lever, from the end of which traction can be exerted from the upper loop.

Wilson showed a very simple folding-up gallows which can be applied immediately to any ordinary door, and from which patients can be suspended for the application of plaster-of-Paris jackets.

James Young, by means of a light iron frame holding a hammock, put on a plaster-of-Paris jacket. The patient lay prone, and thus the spine was well extended.

The interest in the meeting up to this

point centered not so much in the novelty of the procedures advocated and employed as in the confidence shown by the orthopedists in splints and braces made of plaster-of-Paris.

Taylor now exhibited an elaborate apparatus, termed by him a kyphotone, which embodies a distinct advance in the treatment of Pott's disease. The spine is not merely extended before the application of a plaster-of-Paris bandage, but by means of a pressure screw the deformity is corrected as far as may be short of causing pain. Taylor has three machines. The jacket, in one, is applied in the upright position, the child being seated on a stool with the feet supported in stirrups. The pelvis is so fixed with straps that it cannot be improperly tilted. The child is then extended from the head and arms, while the pressure rod, through the agency of a flat plate, makes pressure over the site of the kyphosis. The second machine is so devised that the child is extended in the supine position. Taylor has devised two other machines which he calls recumbent kyphotones; these carry out the same principles of hyperextension. The larger one has the patient lying in the supine position on a plate or pelvic crutch. The smaller one is simple and inexpensive; it can readily be taken apart and carried in a satchel, and consists of two base pieces and uprights. Surmounting one of these there is a plate of sufficient size to support the pelvis. On another piece there is a small plate to press upward against the angle. This latter is adjustable and can be raised or lowered to increase the pressure. The distance between the uprights can also be regulated by a rod attached to the base by set-screws. The plate of the pressure rod is incorporated in the jacket during its application. It can be easily slipped out after the patient is removed from the machine by making an incision on one side of the pressure rod in the plaster, which at this stage is not entirely hardened. This opening can be easily closed by molding together the loose edges. In the earlier stages, when there is no deformity, the latter is prevented by plaster jackets applied in a slight hyperextension on the small recumbent kyphotone. In beginning deformity a similar treatment is advocated. More advanced cases require the use of the large recumbent or upright kyphotone.

Reports on Therapeutic Progress

THE TREATMENT OF COUGH.

The following methods of treating cough are quoted in the *Journal des Praticiens* of March 15, 1902. A useful formula is

Hydrochlorate of morphine, 2 grains;
Cherry laurel water, 2½ drachms.

From 3 to 10 drops of this may be taken from four to six times in 24 hours.

Another formula recommended by Rummo is

Hydrochlorate of morphine.
Hydrochlorate of cocaine, ää 2 grains;
Sulphate of atropine, 1-100 grain;
Cherry laurel water, 2½ drachms.

Three to 10 drops of this may be taken three or four times in 24 hours, either in a little syrup or on a piece of sugar.

In other instances the following formula is useful:

Heroin, ½ grain:
White sugar, 1 drachm.

Make into ten pills and give three or four a day.

In cases where there is cardiac debility in association with cough we may administer

Hydrochlorate of morphine, 2 grains;
Sulphate of sparteine, 7 grains;
Distilled water, 3 drachms.

Ten or 15 drops hypodermically at a dose.

In other instances the following pill may be ordered:

Denarcotized opium, 1 grain;
Extract of cannabis indica, 2 grains;
Extract of stramonium, 1 grain.

Make into four pills and give two or three a day, if the cough is persistent.

Still another mixture is the following:

Hydrochlorate of cocaine, 2 grains;
Chloral, 45 grains;
Bromide of potassium, 45 grains;
Glycerin, 1½ ounces:
Distilled water, 10 ounces.

Put into an atomizer and spray the throat for laryngeal cough.

ON THE TREATMENT OF CHOREA.

In *Treatment* for April, 1902, RUSSELL in writing on this theme summarizes his views as follows: Of the value of rest in bed and isolation little need be said. The matter is one of universal experience in severe cases. It is doubtful, however, whether such treatment is of very great value in slight cases, unless it be from the point of view of moral effect. The writer ex-

presses his belief in the sedative effect of hot baths—or, better, hot packs—in bad cases, and that general massage is also of some use. Though having no experience in the use of regulated exercises in the later stages of chorea, he is inclined to think that good results might be obtained so long as they produce no immediate or subsequent increase in the movements. That great variations occur in the extent to which choreic patients are able to inhibit their movements he has shown in a paper published in the *Lancet* of April 1, 1899, and believes that such power, when it exists, might be developed by judicious exercises. The outpatient department, unfortunately, offers no opportunity for the employment of such rational methods of treatment.

COCAINE AS AN INTOXICANT AND ITS DEMORALIZING EFFECTS.

In the *Indian Medical Gazette* for March, 1902, Bose tells us that besides the use of cocaine hydrochlorate as a therapeutic agent, its consumption as a drug for intoxication is so great in the Calcutta market that unless stringent measures be forthwith adopted to control its sales there is reason to fear that its demoralizing effects will soon spread amongst the juvenile members of respectable families, and in no distant date special asylums will be required for the safety and treatment of cocaine inebriates.

Fortunately, however, the cocaine habit is at present confined to a class of people who are more or less addicted to opium, ganja, or alcohol, but we occasionally come across cases where the victims have contracted the habit from the very beginning. We do not know how the people of Calcutta have derived their knowledge of the intoxicating property of a costly drug which has hitherto been only handled by medical men, but facts collected tend to show that they have got it from their Bhagalpore brethren, where cocaine has become a social necessity amongst the less thoughtful class of men. The inebriates say that the hilarity it produces is almost instantaneous, and is followed by no deleterious results. The novitiates, as a rule, take it quite secretly during the early hours of the night, whilst confirmed and veteran eaters take it during all hours of the day. It is generally taken in the form of tabloids or powder and chewed with betel leaves and slaked lime.

Unlike ganja, or bhang, it requires no special preparation. The habit once acquired cannot be easily given up. The author took special interest in the treatment of a penitent who brought ruin upon himself and his family by contracting the cocaine habit. The symptoms watched and recorded in this case, as well as the reports of other cases, are of some interest to the members of our profession. The first symptom experienced by the victim after he has taken a dose of cocaine is loss of sensation in the tongue and lips, followed by dryness of the mouth and fauces. A thermometer placed under the tongue does not indicate any abnormal rise of temperature. The approach of the so-called hilarity is announced by a feeling of heaviness of the head, throbbing of arteries of the neck, and palpitation of the heart. The pulse becomes slightly full and quick, but never exceeds 110. At this stage the inebriate would like to be left alone; he firmly closes his lips and avoids talking to friends, lest in his attempt to do so the saliva flows out of his mouth. His ears become hot and red, whilst his cheeks become pale, and the tip of the nose becomes cold. Perspiration soon breaks out on the forehead and neck, and the indication of the maximum amount of hilarity is marked by the coldness of the finger ends and dilatation of the pupils. This stage lasts from thirty to forty-five minutes, after which the victim longs for a fresh dose, and unless he gets it then and there he feels lifeless and dejected. This depression of spirits is more imaginary than real; no fall of temperature nor slowness of the pulse is noticeable, but the respiration becomes slightly hurried. The tongue and lips now become moist again, and perspiration on the forehead ceases altogether, but the pupils remain dilated. The physiological effects of cocaine are most marked upon the novitiates. The teeth and tongue of the confirmed cocaine eaters turn jet-black, and this is probably due to the chemical change produced by the action of lime and saliva upon cocaine.

The tendency for increasing the dose of the daily ration becomes irresistibly great, and the penitent whose history has just been given stated that he increased his dose from one to twelve grains within the short space of a month. Unlike opium, it brings on insomnia and anorexia, soon followed by dyspepsia and diarrhea. The dyspepsia of

a cocaine inebriate is very obstinate and does not readily yield to treatment. Its prolonged use brings on deafness, and the confirmed cocaine inebriates are slightly deaf. The quantity of urine is diminished, but in none of the writer's cases was albumin detected. Delusions and hallucinations often disturb the mental tranquillity of the inebriates and gradually make them most miserable. In some cases cocaine brings on acute mania, which is not amenable to treatment.

OPHTHALMIA NEONATORUM.

In the *Philadelphia Medical Journal* of April 12, 1902, REYNOLDS WILSON says the demands in the matter of treatment of this state are met by the following method of procedure:

1. The antepartum care of the birth canal.

2. The scrupulous cleansing of the lids following expulsion of the head, and constantly thereafter, in suspicious cases.

3. The non-invasion of the palpebral sac by separation of the lids before the appearance of typical discharge.

4. Prompt and absolute isolation upon the appearance of conclusive signs of specific inflammation.

5. Thorough and systematic irrigation.

6. Astringent application of silver nitrate in cases of prolonged suppuration.

In conclusion, as an important adjunct to local treatment attention should be given to the general condition of the child in cases of debility and malnutrition. The measures directed toward the care of the infant are comprised in cod-liver oil inunctions, small doses of whiskey internally, and breast feeding. At the same time the mother should receive some form of tonic treatment.

THE TREATMENT OF HEMORRHAGES DURING THE COURSE OF INFECTIOUS DISEASES.

The *Journal des Praticiens* of December 28, 1901, suggests the use of the following formula for the various hemorrhages which complicate the course of infectious maladies:

> Sulphuric acid, 1 drachm;
> Distilled water, 12 ounces:
> Syrup, 3 ounces.
>
> Two tablespoonfuls four or five times a day.

Roger recommends the following formula for the use of chloride of calcium for this purpose:

> Crystallized chloride of calcium,
> Syrup of bitter orange peel, āā 1½ ounces;
> Brandy, 1 ounce;
> Distilled water, 2 ounces.
>
> Give a teaspoonful four or five times a day.

It is stated that this mixture is particularly useful in hematuria.

For hemorrhage from the nasal cavities, solutions of gelatin in normal salt solution are excellent.

THERAPEUTIC APPLICATION OF CACODYLATE OF SODIUM AND INTRAVENOUS INJECTON OF ARSENIC.

In the *Therapeutische Monatshefte* for April, 1902, MENDEL tells us that one of the important advancements in therapeutics consists of devising a method of application of valuable specific remedies, which will elevate their curative effect or remove their unpleasant symptoms. For example, in place of metallic mercury used in the form of gray oil, harmless chemical combinations of the metal are recommended for subcutaneous or intravenous injections. Quinine, the recognized specific and prophylactic drug for various forms of malaria, shows a far more energetic effect when introduced into the veins according to Baccelli's method than with the old methods. Likewise the introduction of arsenical preparations, which can be taken in large quantities without danger to the organism, is a marked progress of therapeutics. Gautier (1898) was the first who introduced cacodyl (As(CHO)2) instead of other arsenical preparations, and communicated the result of his observations to the Academy of Paris in July, 1901. The splendid results obtained in various diseases by him and others, especially French authors, warranted Mendel to make personal investigation of the subject. In Germany until now cacodylates have been employed only in diseases of the skin.

The author tried it not only in diseases of the skin, but also in anemia, chlorosis, localized tuberculosis, diabetes, Graves's disease, malaria, and various nervous diseases. As to method employed, Gautier advised subcutaneous injection as the only efficacious administration, while others obtained similar results by os and rectum without injurious effect. The author followed Gautier's advice, and administered

the drug subcutaneously in increasing doses as high as 0.2 pro die, while per os he gave the drug when for some reason he could not inject it. He found that in a solution of five per cent cacodylate of sodium is absolutely safe and has no injurious effect upon the tissues. He also made 400 intravenous injections, which proved to be not only absolutely without danger, but also in its curative effect the most rapid and efficacious of all other methods. The intravenous method should therefore be employed in all cases except when the veins of the elbow are not sufficiently developed. For these injections he uses Pravaz's syringe with a very fine needle. In some cases the injections are indicated in loco morbi, as for example in cases of sciatica, and in carcinoma of the breast.

The following are the results of thirty cases treated by this method:

Anemia and Chlorosis.—Three chlorotic girls, two anemic women, and one anemic young man were treated by this method. In all patients after a few injections he could see a marked subjective and objective amelioration; the weakness improved, headache, palpitation, and lassitude disappeared, the appetite was better, the bodily weight increased, the mucous membranes had a better color—in short, in four to six weeks the improvement was remarkable, a fact which is rarely seen in treatment with iron. The circulation was also markedly better. The patients stated that the coldness of the extremities of which they usually complain in winter was absent, and they no more suffered from frost-bites. In one case of chlorosis a badly compensated mitral insufficiency with loud heart-beats diminished considerably in intensity and the action of the heart became regular. It was probably due to a better formation of blood, which was so evident from day to day that one must think of some direct influence of the arsenical solution upon the valvular disease. The treatment of chlorosis and anemia in mild cases lasted about four weeks. The dose at the beginning was 0.05, increased gradually to 0.1, and injected every other day. In severer cases the injections were made every day and dose increased to 0.2. After three weeks of treatment a pause must be given for eight days, and then again the same treatment. A few cases only the author treated per os in pill form.

Tuberculosis.—According to Gautier all cases, even the most advanced ones, are benefited by this drug more than any other. The diseased process and the general condition improved considerably. Favorable results were also reported by Evoli (Naples) at the Italian Congress held in Pisa in 1901. Out of eleven cases treated by Mendel, ten had diseases of lungs, three of them of a very pronounced character, with fever of 40° C. As far as the fever is concerned, six to eight weeks of treatment gave negative results, also the pulmonary symptoms remained unaltered, but the bodily weight increased. In seven cases of pulmonary tuberculosis with milder symptoms and evening temperature of 38.05° C. good results were obtained. After a few injections the general condition improved, also the appetite and general appearance, bodily weight went up, although the diseased process remained unaltered. The cough, however, decreased considerably. After two to three months of treatment (three cases) the loud râles of the apices disappeared, so that the patient could be considered cured, while in four cases, although no absolute recovery, a subjective and objective improvement could be noted. Brilliant was the result in a man twenty-five years old, who had been suffering for three years from tuberculosis of the right testicle, right spermatic cord and bladder, also of a catarrhal condition of the apex. The testicle and a large portion of the cord were removed. In the course of convalescence a number of fistulæ formed in the scrotum and inguinal region, which suppurated considerably; frequent retention of urine brought on attacks of fever. The patient's strength went down more and more and the prognosis was very unfavorable. With the cacodylate treatment an amelioration immediately followed. The fistulæ closed very rapidly, and the urine became clear, so that at the end of five weeks the patient gained fifteen pounds, although the condition of the lungs remained unaltered. The method employed was the same as in the cases of anemia. The maximum dose was 0.15. The intravenous method proved to be the best.

Diabetes.—In this disease also the general beneficial effect of arsenic was noted. As the antidiabetic régime was not kept up, the author did not notice a decrease of sugar. The weight increased soon to three kilos, the strength increased every day, the cardiac disturbance disappeared; also the sexual

power which for years had been lost in a man sixty years old returned, so that he began to suffer from emissions.

Disease of the Thyroid Gland.—Two factors indicate the necessity of using cacodylate in some diseases of the thyroid gland. Gautier has shown the presence of arsenic in normal thyroid gland. Ewald observed in the course of thyroid treatment a group of symptoms, called thyroidism, which was removed by administration of Fowler's solution. In one case of Graves's disease treated by the author with intravenous injections of cacodylate of sodium there was no marked improvement of the majority of the symptoms, but the gland did not increase in size. In another case of Graves's disease lasting three years all sorts of remedies were tried without avail. As soon as the cacodylate treatment was instituted (0.05 to 0.1 every other day) the attacks of migraine from which the patient suffered ceased, the goitre entirely disappeared at the end of four weeks, and the pulse went down from 180 to 100. As in the other cases the general condition improved. In a case of goitre ten injections in the substance of the gland reduced the growth considerably.

Nervous Diseases.—The favorable influence of arsenic upon the central and peripheral nervous system has been known for a long time. An old and obstinate case of sciatica which for four weeks was treated without result with antipyrin, aspirin, and potassium iodide, was cured in fourteen days with eight injections of cacodylate (0.075 each) made into the nerve at the point of its emergence from the sacrosciatic foramen. A pressure palsy of the musculospiral nerve in a fifty-year-old man was promptly cured with subcutaneous injections. A case of hysterical muscular weakness in both legs was cured in four weeks with fifteen subcutaneous injections. In migraine intravenous injections of cacodylate proved to be a specific (two cases).

Skin Diseases.—A case of severe generalized psoriasis complicated with diabetes was not relieved by internal and subcutaneous administration of cacodylate. The patient could not stand a single arsenical preparation, which always provoked pain in nerve-trunks, muscles, and stomach. Two girls suffering from acne, in six weeks were greatly benefited by subcutaneous injections of cacodylate.

In conclusion Mendel thinks that in cacodylate he finds a remedy in which arsenic can be given in large quantities. This preparation has not only its specific value in various diseases, but it has also a tonic effect, which can be seen from the general good condition and increase in bodily weight. The best method is the intravenous administration.

[In the Editorial and Progress columns of the GAZETTE we have recently shown that the cacodylates are not deserving of as great a degree of confidence as Mendel seems to feel.—ED.]

INTRAVENOUS INJECTIONS OF CORROSIVE SUBLIMATE.

In the *Münchener Medicinische Wochenschrift* of April 22, 1902, SERAFINI gives us the history of this method. He begins by pointing out that to Baccelli belongs the merit of demonstrating with the greatest success the method of introducing drugs directly in the blood-vessels. Experiments on animals and intravenous injections on human beings for therapeutic purposes were conducted in various countries without success from 1667 to 1825, when Drousart, of Bordeaux, after a series of experiments and clinical observations showed that intravenous injections could be used in hydrophobia, in poisoning with snake venom, and in tetanus. Since 1825 new facts have accumulated in the literature. Latta (N. Tamburini. Nozioni fondamentali di materia medico, 1881) injected carbonate of soda (2 per cent) in a case of cholera; Sahn and Bernatzik injected aqua ammonia for snake poisoning; Oré obtained good results with chloral hydrate, Hoffman in 1884 with hydrochlorate of quinine in typhoid fever. In veterinary medicine the intravenous injections were applied to a large extent and with good results. In September, 1900, Serafini used the intravenous treatment with hydrochlorate of quinine in a grave case of malaria, in which all hope of saving the patient was given up. On the day following the injection the improvement was marked, and the patient recovered. Baccelli obtained good results with intravenous injections of corrosive sublimate in syphilis. He proposed it also in the treatment of other infectious diseases in men and animals. The intravenous injections of corrosive sublimate in bubonic plague gave good results only in the

hands of Ferni (Corriere Sanitario, No. 42, 1901).

Serafini tried to determine if sublimate has really such a favorable influence upon the blood and diseased organs as Baccelli attributed to it. We know that sublimate loses its disinfectant or antiseptic power when it acts upon fluids or albuminous substances, with which it forms albuminates. The anthrax bacilli, which are killed in a few minutes in a watery solution of sublimate (1:500,000) and in a bouillon solution of sublimate (1:40,000), are destroyed in blood-serum containing sublimate as 1 per 2000. The antiseptic power will last forty-eight hours, when the blood-serum solution of sublimate will be 1:15,000, kept at a temperature of 37° C. and salt added to it (Behring). The author undertook a series of experiments upon animals in that direction. For this purpose he selected two infections, the microörganisms of which are found not only where the diseased process begins, but also in the blood. He experimented with two classical septicemias—anthrax and chicken cholera. The animal was a dog, in which he injected the sublimate through the external jugular vein. The operation was conducted in the most careful way, so that suppuration was avoided. The sublimate solution was prepared according to Baccelli's formula, so that each centigramme of sublimate contained 0.75 milligramme of salt. While the addition of salt elevates the bactericidal effect of sublimate, it diminishes however its toxicity. A dose of two centigrammes of sublimate killed within two hours a dog weighing 1980 grammes, and doses of one centigramme had the same effect on dogs weighing 1700 to 1800 grammes at the end of two to three days, during which time marked emaciation and diarrhea were noted. Autopsy showed marked congestion of viscera and hemorrhagic nephritis. With injections of five milligrammes the effect was less severe, although one of the dogs showed on the same day symptoms of depression and diarrhea, which however disappeared rapidly. Another dog died with visceral congestion and hemorrhagic nephritis at the end of twenty-one days.

The author arrives at the conclusion that generally speaking the maximum and not fatal dose of sublimate for a dog weighing 1800 grammes is five milligrammes, and a dose which shows the relation of sublimate to bodily weight is 1:360,000. In the first series of experiments four dogs were inoculated subcutaneously with a culture of anthrax bacilli prepared on agar, which developed in the thermostat at 37° C. during twenty-four hours. The intravenous injections of sublimate were made twenty-four hours later. One of the dogs died before the sublimate injection was made, another shortly after an injection of five milligrammes. In a third one weighing 2000 grammes five milligrammes was injected, and in the fourth one, weighing 1700 grammes, two milligrammes was injected. Both died thirty-six hours after the inoculation and twelve hours after the injection of sublimate. Specific bacilli were found in the blood, liver, and spleen. The second, third, and fourth series of experiments gave similar results.

In his experiments with chicken cholera, the author observed the same relation between the sublimate and bodily weight as in the previous experiments. In the first series he inoculated subcutaneously a culture of the specific bacilli developed in bouillon. One dog of 2250 grammes was left for control; in the other three dogs, weighing 1600, 1850, and 1800 grammes, he injected five, two, and one milligramme respectively six hours after the inoculation. Those that received one to two milligrammes of sublimate died eighteen to twenty hours after the injection, and the third with five milligrammes, twenty-five hours later. The control animal survived. Autopsies showed systems of hemorrhagic septicemia, numberless bacilli of chicken cholera in blood, spleen, and liver. A second and third series of experiments gave similar results.

The author concludes from these experiments that what is observed in the organism with corrosive sublimate does not correspond to what is seen *in vitro*. Also the animals which received the maximum but not fatal doses of sublimate died before the control animals, a fact which is in accord with the recent observations of Cadeac. This writer has found that intravenous injections of sublimate diminished the resistance of dogs to anthrax infection. The same view can be held in regard to other infections, as bubonic plague or tetanus (Kitasato). With all due respect to Baccelli and his work, the observations made and reported are not sufficiently convincing to assert that the question is solved. Sublimate

injected in the veins has by no means a bactericidal effect, not even in the relation of 1 to 360,000 of bodily weight, or of 1 to 30,000 of weight of the blood. Serafini does not therefore believe that the intravenous injections of sublimate can be considered as a general therapeutic method in treatment of infectious diseases.

OBSERVATIONS ON "CAISSON DISEASE" AND ITS PREVENTION.

MACMORRAN says in the *British Medical Journal* of April 26, 1902, concerning the treatment, that nerve sedatives, such as bromides, especially ammonium bromide, have been found to be better than opiates, and in a severe case of pain cannabis indica gave great relief. Potassium nitrate, potassium acetate, and ammonium acetate are good in the convalescent stage, or when the pain diminishes, but may be given from the first with good results. By far the best treatment is the medical lock, into which, however, a purified air should be pumped till the pain goes, and then the pressure very gradually reduced. To effect this there should be attached to the medical lock an apparatus containing caustic soda in screens over which the air in passing would give up most of its CO_2. Similarly the prevention of the worst form of caisson disease would be effected by getting rid of the CO_2, where it collects in largest quantity, namely, in the shield where the men are working. This was done in the Greenwich Tunnel by running a blow-off tube down to the shield and blowing off the air every hour, or oftener if necessary. The carbonic acid was reduced almost one-half in volume by this expedient alone.

Finally, all workmen about to be employed in compressed air should be subjected to a most searching medical examination, all new hands should be examined after work each day for a week, and the gang going off and that going on twice each week, and those who are indisposed kept above ground till well; should the pulse have a high tension the man should be kept under observation every day, and should there be a booming sound in the heart or reduplication of the second sound he should be suspended altogether. This entails great labor on the part of the medical officer, but the responsibility of allowing men to work when unfit is infinitely greater, and the freedom of those under his care from a disease of such a distressing nature is a sufficient recompense.

THE RIGHT AND WRONG USE OF DIGITALIS BASED ON CARDIAC PATHOLOGY.

In the *Medical News* of May 3, 1902, PORTER states that in aortic lesions, either in incompetency or stenosis, there seems to be no good reason for using digitalis at any stage. Certain it is that in aortic regurgitation the increased systolic stroke cannot freely compensate for the prolonged diastolic period and longer time during which regurgitation can take place. Added to this are the increasing arterial tension, with its greater resistance in front of the heart, and the progressive cutting down of the nutritive supply to the heart muscles, both of which, or either one alone, would be sufficient to contraindicate the use of digitalis in aortic insufficiency. In aortic stenosis the augmented cardiac systole might for a time force a larger volume of blood into the aorta, thus temporarily improving the condition; but the increased work of the cardiac muscle, together with the poisoning effects of the digitalis upon the muscle fibers, and the progressively diminishing nutrition, will soon be followed by a deterioration of the cardiac muscle and an aggravation instead of an amelioration of the symptoms.

In fatty degeneration, or any enfeebled condition of the heart muscles, digitalis is contraindicated.

In hypertrophy of the heart digitalis might theoretically be useful in cutting down the nutritive supply, thus lessening the tendency to further hypertrophy even if the hypertrophic condition could not be completely removed. Even in this instance, digitalis is too dangerous a remedy to use for such purposes. Digitalis is of service only for a few days at a time at the longest. It should only be given to influence the heart and circulation when the arteries are very much relaxed, and the pulmonary or systemic veins overfilled with blood. In such instances as these it will tighten up the

vessels, and, by augmenting the power of the systole, will force a larger volume of blood into the arterial system. In this manner the surplus of blood can be pumped, as it were, from the venous system into the arterial. This accomplished, the digitalis should at once be stopped and more reliable remedies used to maintain the heart and circulation. To use digitalis outside of these narrow confines, when there are so many other safer and more reliable remedies, is, to say the least, extremely poor therapeutics.

Some argue that by giving a sufficient amount of nitroglycerin in conjunction with the digitalis the damaging effects of the digitalis can be obviated. In a measure this is true, but it does not altogether diminish the increased work forced upon the heart muscle, neither does it antidote the general toxic effects of digitalis upon the involuntary muscles as a class. While this is better therapeutics than the use of the digitalis alone, it is not the best that can be done for the patient, and nothing short of the best should be the aim of the truly scientific and practical therapeutist.

COCAINISM IN CALCUTTA.

The interesting paper by Dr. KAILAS CHUNDER BOSE, of Calcutta, which is printed in the *British Medical Journal* of April 26, 1902, supplies striking and graphic evidence of a very remarkable incident in the social life of Calcutta. Oriental races are peculiarly addicted to nervines; opium and cannabis have from time immemorial been the favorite intoxicants in India. Western races are addicted to alcohol, but its use among natives of India is limited, though there is reason to fear that in large towns among the youth of the wealthier classes alcoholic drunkenness is on the increase. In Bombay some years ago eau de Cologne was largely imported for consumption as an intoxicant. This was a special and quite exceptional practice, resembling the use of sulphuric ether in some parts of the North of Ireland for the same purpose. The consumption of cocaine as an exhilarant is quite a recent phenomenon in India. The vice—for such it unquestionably is—has grown rapidly and acquired such dimensions as to attract the attention of the government and necessitate special inquiry, which will probably lead to special legislation. It appears that the drug is imported in ounce bottles by certain Mohammedan and Marwari dealers. These bottles are sold for 2½ rupees each, but the material is more usually put up in small packets, costing 1, 2, and 4 pies, and retailed by the sellers of betel, the leaf of which is so universally chewed by Indians with lime, areca nut, and other condiments. The law as at present existing cannot hinder importation or prevent cocaine being held in stock, but the excise authorities can place restrictions upon its retail sale, and it has been found necessary to render these more stringent, and to forbid, under penalty, the sale of the drug except by approved druggists and chemists duly licensed, and for *bona fide* medicinal purposes. Unfortunately it appears that some of those addicted to the vice have obtained their supply from dispensaries and even from medical men. It is quite possible that in the first instance the drug has been prescribed for medicinal use, and has been subsequently supplied without sufficient inquiry or scruple when the habit of consumption has been acquired. The regulations recently issued for the control of the sale of cocaine ought, if carefully worked, to render the obtaining of the drug for vicious purposes difficult.

Dr. Bose's paper indicates very clearly what a strong hold the cocaine habit comes to lay upon its victim, and how the satisfaction of the cocaine craving leads to impoverishment and crime. The increase of dose seems to be an inevitable result of habitual consumption, and the amount of the drug which is swallowed daily—from 30 to 60 grains or more by habitués—is startling. The paper also depicts graphically the depressing physical and demoralizing mental effects of the vice. A life once seized by this infatuation seems to be doomed to irretrievable ruin and perhaps to early extinction. Other nervines are rejected in favor of this imperious claimant, and the attempt to cure the cocaine habit by any effort of will or by substitution of other drugs, such as sulphonal or chloral, is evidently vain. The habit is a costly one, and this will probably prevent its spread among the lower classes in India; but it

appears that it has become very prevalent among schoolboys, who belong mostly to the middle classes, and recruit the ranks of those professions and occupations for which education is necessary. Looking at the demoralizing and ruinous effects of the habit, it is eminently desirable that its spread among the more enlightened and useful members of the community should be sternly repressed. Dr. Bose's paper shows, however, that schoolboys are not the only victims, and that traders, brokers, priests, and even the inmates of zenanas, succumb to this peculiar form of social contamination. Repressive measures must, therefore, be far-reaching as well as drastic if the evil is to be adequately dealt with.

MEDICAL ASPECTS OF CHOLELITHIASIS.

Under this somewhat unusual title PREBLE contributes a valuable paper to the *Journal of the American Medical Association* of April 12, 1902. He believes that so far as the medical treatment is concerned, we may dismiss as futile efforts to dissolve stones which are already formed. Calculi are not highly soluble in the test-tube, and anything we may give by mouth is not likely to dissolve them in the gall-bladder. If any of the various methods which have been tried with this idea in mind have succeeded there is no evidence to that effect. Our efforts must therefore be directed toward preventing the formation of additional stones and the relief of troublesome symptoms. With the first indication in mind we must recall the two essential conditions for the formation of calculi—stagnation of the bile and a lithogenic catarrh of the biliary mucous membrane. We must lessen the stagnation and the inflammation of the mucous membrane. Patients should be urged to give up the sedentary life they are usually leading and take a reasonable amount of outdoor exercise. If they are wearing their clothing too tight or lacing with corset or string, they should be shown the error of their ways. Massage is often a useful adjuvant, although there seems to be no use for it and only possible harm in efforts at massage of the liver and gall-bladder as is advocated by some. A wide variety of diets have been planned and include all sorts of extremes. The best diet is a simple, well proportioned one, taken regularly and rationally, and in as small quantity as is compatible with the maintenance of nutrition. Every effort must be made to keep the gastrointestinal tract in the best possible condition, both for the effect this has upon the stagnation of the bile and upon the catarrh of the gall-bladder. In this way the circulation through the mucous membrane is improved, favoring recovery from the existing catarrh, increasing the resistance to new infection and other causes exciting inflammation. The diet and the exercise are probably the most important factors in accomplishing these purposes, but there is also a long list of drugs which have proved themselves useful adjuvants in cases of this sort. Prominent among these are the various mineral waters and salts. Carlsbad, Epsom, Glauber, and others of similar character, mercurials, salicylates, and the various gastrointestinal antiseptics, are all used. So far as the treatment of the colic is concerned nothing need be said except to draw attention to the danger of the formation of the morphine habit, if the attacks are frequently relieved by this drug. In some cases, indeed, this gallstone morphinism becomes an indication for operation. The truth of the matter, however, is that any patient having attacks of colic so frequently that there is any danger of morphinism furnishes in the attacks sufficient indication for the adoption of mechanical means.

BLACKWATER (HEMOGLOBINURIC) FEVER.

This ever-interesting theme is once more considered by CURRY in the *Journal of the American Medical Association* of May 3, 1902. In regard to treatment he reminds us that quinine has been given in hemoglobinuric fever on the supposition that the hemoglobinuria and fever are due to the action of the malarial parasites. Some writers, as Stendal, Kucher, and others, advocate the treatment of this condition with large doses of quinine; others, among them Tomaselli, the Plehn brothers, and Koch, attribute the fatal issue or the grave course in many hemo-

globinuric attacks to the obstinacy of physicians in the tropics in giving quinine (Marchiafava and Bignami). These latter writers hold that the conduct of physicians in the matter of the administration of quinine should be regulated by the result of the blood examination. They say: "In cases where active malarial parasites are present in the blood during the attack, and where the hemoglobinuria comes after a succession of malarial attacks, then quinine should be given." These writers state further that "hemoglobinurias without quinine are much milder than those treated with quinine." Manson regards quinine in this condition (blackwater fever) as comparatively useless in all cases, and that it exerts no effect in cutting short the duration of the attack. Plehn, who has had an extensive experience with blackwater fever in the Cameroons, believes that quinine in this condition tends to aggravate the hemolysis. He deprecates altogether the use of quinine during a hemoglobinuric attack. He suspends the administration of the drug during the attack, resuming it subsequently after the attack has subsided. Plehn's results are far more favorable than are those of the physicians who give heroic doses of quinine.

The treatment of hemoglobinuric fever (aside from quinine) resolves itself into the treatment of symptoms. In severe cases where vomiting is persistent, resort may be had to nutrient enemata, and to intravenous injections of normal salt solution. In uremic cases we should administer diaphoretics, chloral hydrate, etc. Often cracked ice and small amounts of brandy or champagne will be retained when it is impossible to give anything else by mouth. Inhalations of chloroform are advised by Marchiafava and some French writers, where there is agitation with cyanosis and dyspnea. Stimulants, inhalations of oxygen, and the administration of opium and chloral hydrate are recommended by various writers for the same symptoms. Among other drugs advocated by various men are ergotin, methylene blue, tannic acid, sodium salicylate, and arsenic.

Manson suggests, if the malarial parasites are present in the blood, the use of moderate doses of quinine hypodermically (five grains every three or four hours), preceded by a large dose of calomel. When the urine becomes much diminished in amount and tends to be suppressed, diuretics must not be given with the idea of stimulating the kidneys, but hot fomentations to the loins applied, plenty of bland diluents administered, and the patient put on a strict milk diet, which should be continued until all albumin has disappeared from the urine. He regards these as the only rational and safe methods of treating blackwater fever. He further states that antipyretics, as antipyrin and phenacetine, are dangerous.

Koch, as well as Plehn and others, believes that quinine is positively harmful in hemoglobinuric fever, and advises strongly against its use. Plehn, Marchiafava and Bignami, and other observers, state that the hemoglobinuric paroxysm often subsides spontaneously without treatment.

THE TREATMENT OF EPILEPSY BRIEFLY CONSIDERED.

SPRATLING states in the *Journal of the American Medical Association* of May 3, 1902, when speaking on this question, that bromipin, a brominized oil of sesamum, has lately come into use and is a good substitute for the bromides. It is a heavy oil, and in some cases it may be found difficult of digestion. It is best given in the form of an emulsion, which makes it more palatable and which is prepared as follows:

℞ Bromipin, 4 ounces;
Simple syrup, 4 ounces;
Spts. peppermint, 4 drachms;
Mucilage acacia, enough to make 16 ounces.

Of this the dose is one to two or three tablespoonfuls three times a day, an hour or so after meals.

Its advantages are many. It does not produce the disfiguring bromic acne, and given in the form of an emulsion it is nutritious, generally increasing the weight, making it especially valuable in feeble and asthenic cases. It may be used hypodermically in status patients, without producing local abscess like that following the hypodermic use of the bromide salts. One disadvantage of its use at the present time is its cost, being about five times that of the bromides.

If we use the bromide salts, we get

better results by the hypochlorization method—*i.e.*, withdrawing all sodium chloride from the patient's food and salting it with the bromide of sodium. By this we will greatly enhance the action of the bromide, 10 or 15 grains of the sodium salt given in this way being equal to 30 or 40 given in the ordinary manner.

If we have a case of status to treat, the best formula for stopping the attacks is the following:

℞ Potassii bromidi, f℥ij;
Chloralis, f℥v;
Morphinæ sulphatis, gr. ij;
Tincturæ opii deodoratæ, f℥j.

M. Sig.: Add enough water to make 16 ounces, and give the patient one ounce, after he has had six attacks in rapid succession. If the first dose is not effective, it may be repeated in two hours.

The epilepsies due to self-intoxication call for special treatment, and it is important that we regulate the diet of such patients as promptly as possible, for the intoxication comes from putrefactive changes in the alimentary canal. Betanaphthol or salol in five-grain doses is useful in overcoming conditions of intestinal toxemia. In some cases the thyroid extract can be used to advantage, and the best results from its use have come from cases in which there were evidences of arrested mental development. Marked improvement has been known to follow its use in the higher grades of idiocy.

The dietetic treatment of epilepsy is no less important than its medical. The author does not specify in this brief paper all the food articles prohibited or allowed, nor does he mention all the drugs that are of value, and it must suffice to say that all rich foods, such as pies, pastry, cake, things fried in grease or highly seasoned, as well as pork, veal, and cabbage, should be proscribed, the dietetic principle being that an epileptic should live on the lightest and most nutritious foods obtainable, including milk, eggs, cereals thoroughly cooked, and fruits. Of meats he should eat sparingly, then take beef, lamb, chicken, fish, or game, and then only at noon. The evening meal should always be light.

As to the benefits of surgical intervention, our experience does not enable us to take a very hopeful view. In a study of over forty cases that were trephined, four of which were done at the Colony by Dr. E. A. Sharp, second assistant physician, there was no permanent benefit in any case. Some went for several months after the operation without a seizure; but in every case they eventually came back. The chief fault Spratling has to find with such operations, when done for injuries to the brain, is that they are delayed too long after the receipt of the injury. In the meantime the epileptic habit has become firmly established. If the injury is recent and clearly causes the convulsion, we should operate. If it is old and we are in doubt as to the advantages of an operation, it may be well to operate in some cases anyway, both for the temporary benefit the patient may enjoy and for the gratification it will give the patient and his friends. But before doing the operation we should make every possible effort to exclude heredity as a cause of the disease, and be sure that convulsions did not exist before the infliction of the injury.

The moral treatment of the epileptic is urged because he is so often the victim of a vitiated stamina, acquired as a heritage, which makes him need a power other than his own to help him overcome his unfortunate condition.

THE USE OF ADRENALIN CHLORIDE IN OPHTHALMIC, NASAL, AND AURAL SURGERY.

In the *British Medical Journal* of May 10, 1902, GREEN gives us his views in regard to this extraordinary substance.

The introduction of a solution of adrenalin chloride (1 in 1000) has removed the difficulties which hitherto have been met with in using fluid extracts of the gland of having a fluid always ready and active. This difficulty is very great during the hot weather, at a time when it is in great request in the treatment of hay-fever.

The solution requires dilution to the extent of 1 in 5000 for introduction into the nose and ear, and to 1 in 10,000 for instillation into the eye. The diluent should be either boiled water or sterilized salt solution, and the diluted fluid should be put into colored stoppered bottles. If exposed to the light the fluid becomes pink and later brick-red, but does not lose its activity. In ophthalmic work it has been found chiefly

of use in inflammatory conditions of the conjunctiva, and its use is indicated in pannus, iritis, keratitis, sclerotitis, and acute dacryocystitis. The author has not used it much in operations on the eye, but has tried it in one case of enucleation without benefit. He was disappointed at this, having previously used liquid suprarenal and chloretone, and had removed an eyeball without any loss of blood. In aural work its use is indicated in chronic otitis media suppurativa with exuberant granulations or polypi, and acute inflammation of the membrana tympani.

In nasal work it is chiefly of use in swelling and hypertrophy of the mucous membrane, and intranasal operations where a bloodless field is of importance, but the nose must always be plugged after the operation is finished, as hemorrhage may commence thirty to forty minutes after the application of the fluid, and is then often troublesome. This is especially the case in partial turbinectomy, and for this reason the author does not now use it in those cases. Of its value in the treatment of a stuffy nose from a cold in the head he has had the most pleasant personal experience, the relief being rapid and lasting. Patients can insert the wool themselves if instructed how to twist it on the end of a match so that the wool projects well beyond the end of the wood; it is advisable to warn them that the application will smart for about forty seconds, and that the plug should be pushed up gradually, as after about a minute the mucous membrane shrinks and the wool slips in quite easily. The same advice applies to its use in hay-fever, in which it gives most brilliant results.

THE LIMITATIONS OF THERAPEUTICS IN NEUROLOGY.

In the *Journal of the American Medical Association* of May 10, 1902, COLLINS prints an address in which he speaks of the limitations of the neurologist in the line of treatment.

We must realize that a disease which is the expression of a prenatal defect, or of many years' development, cannot be overcome in a few days or weeks. This is generally conceded, but we are not sure that our conduct of the cases is always in keeping with our convictions. It is often necessary for the patient to appreciate it as keenly as the physician. A patient seeks relief for the symptoms of that mysterious neurosis known as exophthalmic goitre or Graves's disease. She may complain only of palpitation and a feeling of agitation, symptoms that seem to her trifling, and she expects relief from them as she would from cough or headache. The fact that she has a nervous organization that is congenitally unstable, and that for years she has been poisoned by depraved secretions of the thyroid gland, is entirely unknown to her, but she must in some way be made to appreciate it before she will take kindly to the tiresomeness of treatment. How else will she be reconciled to lying on her back for from one to three months suffering what seems to her the cruelties of the rest treatment with its concomitants of overfeeding, massage, and electricity. But if she can be made to appreciate what her disease stands for and the natural way out of it, how much easier it is for us to assist nature in restoring her to health. This is not only true of Graves's disease, but of almost every disease of the nervous system.

Another very necessary thing for us to do in our battle with nervous disease is to recognize limitations. The real nerve tissue, the parenchyma of the nervous system, the nerve unit of the neuron, once destroyed is never regenerated. In this respect it does not differ from other specialized tissue cells. No one expects new liver cells to grow or new muscle cells to spring up to take the place of old. Nerve cells may, however, undergo much integral change before they decide to give up the ghost, and inherent and functional restitution occurs in nerve tissue that has been the seat of very decided alteration. Although our hands are not infrequently tied from the start in our encounter with nervous diseases, by virtue of the death of neurons, this should be by no means the signal for despair and retreat. We may find plenty of opportunity in saving other neurons from decay, and in delaying the process in those that are fated to die. Let us take, for instance, locomotor ataxia. A man comes to us when he is forty years old with symptoms that indicate the beginning of the disease. It is almost absolutely necessary that he should know the nature of his disease in order that he may avoid experiences that are bound to be injurious, and that he may coöperate with the physician in delaying the disease

process. Although the outcome of tabes has not been altered by our present-day therapeutic resources, it is beyond question that its course is materially delayed by treatment. So that we may say to our patient with a great deal of confidence that from fifteen to twenty years of usefulness may still be his, which will bring him up to an age when, if he has read his philosophy aright, he should be able to contemplate transformation with some resignation. During this period, which in many cases is much more protracted, he has not only time to put his house in order, but to provide for his dependents. Treatment that can accomplish this cannot be passed over lightly, nor is the making of a diagnosis of tabes when this potency is held in reserve quite equivalent to the signing of his death-warrant in the common acceptation of that term.

EYE COMPLICATIONS OF MEASLES AND THEIR TREATMENT.

The *Medical Record* of May 17, 1902, contains an article by WIESNER, in the course of which he contributes some interesting facts.

For the relief of hordeolum or stye he first describes its pathology, and reminds us that as the result of the inflamed conjunctiva one or several of the glands of the lids also take on an inflamed state; this is characterized by a local swelling gradually extending, followed by a pointing of the resulting abscess. Here, when pus has formed, hot-water applications will usually open the abscess and allow the discharge of the pus. Where this does not happen, the evacuation of the pus may be hastened by wrapping some cotton about the two blades of an ordinary dressing forceps; catching the stye between these, forcibly squeezing it, will empty the inflamed sac, and so bring about recovery; this, though somewhat painful, is a speedy method of relieving the condition.

We now come to the more serious and dangerous complication, namely, keratitis: either of its own initiative, or as a result of extension from the conjunctiva, or of its long-continued course, cornea involvement results. Here we have a more serious disease to handle, one that may lead to a permanent crippling or disfigurement of the cornea. Though fortunately rare, it is met with in a certain number of cases: in children of a constitution weak by nature or run down from some previous disease; in children with poor hygienic surroundings, improperly or underfed; in children of parents who are very poor; and in those ignorant of the laws of health and hygiene. Keratitis may be slight and the patient get well quickly; or the recovery may be protracted, and the deeper layers of the cornea attacked. Destruction of cornea tissue results in a corneal ulcer.

The before mentioned symptoms of conjunctivitis being present, it will be noticed that the photophobia and pain continue; the child avoids the light and will bury its face in the pillow; there is lacrimation perhaps, and some mucopurulent discharge; the photophobia is at times an aggravated and aggravating symptom, and the child will resist the separation of the lids to allow an inspection of the cornea. Right here a word of caution is, perhaps, admissible. In attempting an inspection of the cornea, be sure to make no pressure on the globe of the eye; it may be that a corneal ulcer is on the point of breaking through; a thin layer of cornea tissue, perhaps Descemet's membrane, the most posterior layer, may only just keep the aqueous humor from evacuating. It will be no pleasure, on a successful separation of the lids, to have the aqueous fluid bursting through the cornea, spurting up, fountain-like, perhaps into the face of the observer; so, making no pressure on the globe, previously drying the skin of the patient with cotton, and putting the thumb of one hand over the lower eyelid, with the ball of the thumb resting on the bony part of the orbit below, we make the pressure on the bone, pulling the lower lid down, and at the same time place two fingers of the other hand on the upper lid, resting the fingers on the rim of the orbit above, and pull the lid up; at times it will be necessary to catch the margin of the upper lid with the points of the fingers. This maneuver is best accomplished with the child's head resting on a towel between the knees of the observer. This procedure will usually expose the cornea for examination, except in the hands of those unaccustomed to its use.

The cornea being involved, the photophobia and blepharospasm continue; photophobia (fear of light) being a rather constant symptom of keratitis. On separating the lids, a spot of infiltration of the cornea will be seen; this will appear of an opaque

character, more or less extensive, and may show itself at any part of the cornea, there being no one point of the cornea more liable to involvement than another. Under treatment this may resolve and the patient get well; or the infiltration may continue, the cornea break down, and cornea ulcer result; the pupil will be contracted, pain complained of, and lacrimation will be present. When the ulcerative process is severe in turn, the several layers of the cornea become involved and destroyed, and finally only the posterior lining membrane exists; this from the intra-ocular pressure may be pushed through the necrosed cornea, and present as a shining watery vesicle; it may burst, and the anterior chamber be evacuated. The iris is now well forward on the cornea, and danger of adhesion is great (anterior synechia); often this synechia is permanent.

As an ulcerative condition anywhere always involves destruction of tissue, so here. In the healing process that part of the cornea destroyed by the ulcer is replaced by cicatricial tissue, which is always of a white, opaque color, and is permanent, thus causing a disfigurement as well as a crippling of the organ. In the treatment of cornea inflammations ice is not admissible, because of the danger of cutting off the circulation; but rather hot water should be used. The physician should take a small towel or napkin, or pledget of cotton, dip it in very hot water, as hot as the hand will stand, and apply it to the closed eyelids for a period of ten or fifteen minutes every two or three hours.

Atropine is indicated here. The writer's rule is to instil a two-grain solution into the eye frequently (every hour) until the iris is well dilated, care of course being taken to avoid poisoning; after that use the atropine often enough to keep the pupil dilated, say two or three times a day; the reason for this being to get the iris away from the anterior capsule of the lens, to avoid synechia posterior; also, if perforation of the cornea should result, the iris is in the most favorable position. Atropine in these cases has a local soothing effect. Boric acid cleansing for the discharge and white vaselin between the lids can be used as needed.

It will not be necessary to put the little patient into a dark room; air and light are excellent tonics. If the photophobia is a prominent symptom the light may be subdued. Much depends on constitutional treatment in the management of these cases; proper feeding of the patient comes first; tea and coffee and sweets are to be absolutely interdicted. Plain, simple, nutritious diet, mostly milk, to be ordered; baths, both sponge and tub; attention to cleanliness, and personal hygiene; bowels to be kept open.

In the writer's experience cod-liver oil is one of the best tonics for children, and most children take it kindly. The syrup of the iodide of iron may also be given to good advantage. Special attention must, however, be given to the feeding of the patient, as on this may often depend the recovery of an eye.

ON THE EFFECT OF THE DIGESTION OF GELATIN ON STYPTIC PROPERTIES.

H. C. Wood, Jr., concludes in *American Medicine* of May 3, 1902, as follows:

1. Pepsin digestion of gelatin does not destroy its coagulating effect on the blood.
2. The resulting product is dialyzable, and therefore capable of absorption.
3. The administration of gelatin by the mouth in the treatment of hemorrhage is, therefore, a rational procedure.
4. Gelatose seems to antagonize, if given in sufficient quantity, the anticoagulating action of peptone.

SOME POINTS IN THE TREATMENT OF PUERPERAL ECLAMPSIA.

After quoting largely from the statistics produced by various plans of treatment, Herman in an article in the *Lancet* of April 26, 1902, points out that different cases of eclampsia differ much from one another as to the time at which the disease comes on, the number of the fits, and the duration of the attack. Whether or not they cease after delivery depends upon these conditions. In small groups of cases there is often an accidental preponderance of cases of a particular kind, and therefore it is that in some of the cases quoted there is a large proportion, and in others a small proportion. But looking at them broadly and seeing in how large a number fits continued after delivery, it seems that the statement that when the uterus is emptied the fits at once cease is one which it is impossible to reconcile with the facts. When the uterus is emptied the fits do not at once cease; emptying the

uterus is not a certain means of checking the fits; when the uterus is emptied the fits often continue—in most cases they get better, in some they get worse (see table).

TABLE SHOWING THE EFFECT OF DELIVERY ON THE FITS.

Authority.	No. of cases.	Fits ceased after delivery.	Fits continued after delivery.
Schauta	185	62	123
Brummerstadt	63	18	45
Schreiber	105	63	42
Lantos	44	32	12
Goldberg	81	19	8
Bidder	455	108 (33%)	...
Bidder (forceps cases)	....	66	40
Dührssen	200	65	53
Zweifel	120	55%	45%
Glockner	141	48 (34%)	93 (66%)
Olshausen	143	92	51
Wieger	111	39	72
Auvard	179	60	119
Goedecks	268	160	108
Herman	38	18	5

The natural history of the disease should lead us to expect, unless delivery were actually injurious, that eighty per cent would get better. It may be said, even if the contention that after delivery the fits at once cease be given up, that it is a fact that speedy delivery is good treatment; that cases treated by accelerating delivery do better than those in which labor is allowed to take its natural course. Let us see if this is so.

Goldberg gives the results in his eighty-one cases. The death-rate among the whole was 24.7 per cent; among those patients delivered by operation it was 34.21 per cent; among those naturally delivered it was 16.28 per cent. The whole mortality in Dührssen's cases was 21 per cent. The mortality among those in whom the disease began before delivery was 23.7 per cent. Dührssen thinks that three of the deaths occurred from sepsis and therefore ought to be deducted. If this be allowed it brings the mortality down to 19.8 per cent for the whole number, and 22.7 per cent for those in which the disease began before delivery. In eighty of Dührssen's cases delivery was artificially accelerated, and in these the mortality was 23.75 per cent. In thirty delivery was allowed to take place spontaneously, and among them the mortality was 21 per cent. The total mortality in Lantos's cases was 28.3 per cent. Of the forty-four in which the disease came on before delivery, in thirty-three delivery was accelerated, and in eleven it was left to nature. Of the former cases eleven patients died, and of the latter two died. In other words, emptying the uterus was followed by 33 per cent of deaths; letting it alone by 18 per cent. The total mortality in the cases collected by Schreiber was 19.7 per cent. The mortality among those delivered by operation was 19.23 per cent, and among those spontaneously delivered 20.3 per cent—an insignificant difference.

Zweifel writes as one convinced of the good results of Dührssen's practice of delivering by extensive incisions into the cervix and vagina. He tells us that the cases treated by him fall naturally into two groups, one from April, 1877, to the beginning of 1892, during which the principle of treatment was expectant, and the second from the beginning of 1892 onward, in which Dührssen's practice was followed. The first set of cases numbered forty-nine, with sixteen deaths, and the second eighty, with twelve deaths—a death-rate of 32.6 per cent by expectant treatment, against 15 per cent by active treatment. This looks convincing until one examines the records of the actual cases. He then finds that in the first, or the period of expectant treatment, many patients were treated by rapid delivery, either by forceps, turning, or craniotomy; and that in the figures are included patients who died undelivered, and cases in which the convulsions began after delivery. He also finds that in the second period, or that of active treatment, not all were delivered rapidly—that there were patients who died undelivered and whose fits began after delivery. And in both sections there are a number as to whom there is no record how they were delivered. The latter are numerous enough to prevent any numerical statement of the results of different modes of delivery. One patient was delivered by the most rapid of all methods—Cæsarian section—and had thirty fits after delivery.

Zweifel remarks that the preparation of his statistical account of his cases has shown him how difficult it is to prove things by figures, and how difficult it is to guard oneself from false conclusions. Even if one is careful to keep in memory the impression derived from individual cases, yet one finds the impressions of experience greatly upset by numerical test. The total mortality among the cases analyzed by Glockner, after deducting that of one patient who was brought in dead and that of another who died a few minutes after admission, was 17.24 per cent. But Glockner says that there were three others who were moribund when admitted, and these should be deduct-

ed; the mortality is then reduced to 15.49 per cent. One hundred and fourteen of his patients were delivered by operation, and the mortality among these was 17.5 per cent. Only ten cases were left to nature, and three of the patients died, a mortality of 33 per cent. It is presumed that the moribund patients were not delivered by operation and only two died undelivered; so if we deduct the third moribund patient the mortality comes down to 20 per cent, nearly the same as that of the operative delivery. In some patients, dilatation of the soft parts as a preliminary to operative delivery was not practiced, presumably because it was not required. In others dilatation was effected slowly by dilating bags, in others rapidly by incisions, as recommended by Dührssen, and in others by the combination of incisions and dilatation. The object of the incisions is to empty the uterus as quickly as possible. Incisions were used in forty-six cases, with twelve deaths, or 26 per cent. They were not used in forty-eight, and in these there were only eight deaths, or 16.5 per cent.

In Olshausen's collection of cases the difference between the results of natural and accelerated delivery is so slight as to be practically nothing. In 111 natural deliveries there were twenty-four deaths, or 21.6 per cent. In seventy-seven operative deliveries there were sixteen deaths, or 20.8 per cent. Among Goedecke's cases there were 192 in which delivery was accelerated by operation: the mortality among these was 16.1 per cent. The mortality among the whole 403 cases was 16.9 per cent.

G. Veit has tabulated 802 cases collected from different maternities. The author uses his figures for convenience, although they include some already quoted. Of the 802 patients, 446 were delivered by operation of some sort, with 114 deaths, a mortality of 25.5 per cent; 356 were not delivered by operation, and of them seventy-four died, or 20.8 per cent. The figures are put in the following tabular form so that they may be more easily seen:

Authority.	Natural delivery.	Accelerated delivery.
Goldberg	16.28 per cent.	34.21 per cent.
Dührssen	21.0 "	23.75 "
Lantos	18.0 "	33.0 "
Schreiber	20.3 "	19.23 "
Glockner	23.0 "	17.5 "
Olshausen	21.6 "	20.8 "
Schauta	26.0 "	43.0 "
G. Veit	20.0 "	25.5 "

It may be said that the figures showing a very high mortality among the patients delivered by operation are taken from preantiseptic times, and do not apply to operative delivery under present-day conditions. This may be so; and it is granted that operative delivery performed under skilful anesthesia and with antiseptic care is not likely to prove fatal, to aggravate the disease, or seriously to injure the patient. But if it is a fact that "delivery by the most rapid means consistent with safety" is the first, the most important thing in treatment, then every accoucheur and midwife ought to do his or her best to hurry on delivery, no matter what the skill or experience of the operator, what the surroundings of the patient, or what the amount and kind of assistance at hand; and if this is acted on no doubt in some places operative delivery will have a higher mortality than delivery left to nature. Taking the very best results of operative delivery as compared with leaving delivery to nature, and what do they come to? A difference in the mortality of one or two per cent only. What surgeon would recommend an operation if all he could say in its favor was that his patient's chance of recovery was about two per cent better if he had the operation done than if it were let alone? We submit that immediate delivery is not the first thing in treatment; that if it is beneficial the benefit is of the most trifling kind, so small as to be doubtful. The practice is one based upon theory, not upon experience. The advantage is so small that if hurried delivery were indiscriminately practiced by all who attend labor, in all circumstances, the mortality arising from operative delivery would soon overbalance the trifling and doubtful benefit of emptying the uterus. Therefore, the teaching that to empty the uterus quickly is the first thing in treatment is bad, because likely to lead to bad results.

If rapid delivery is the one thing needful in eclampsia, if it is a fact that emptying the uterus at once causes the fits to cease, Cæsarian section would unquestionably be the proper treatment. No other method of delivery is so prompt. Rupturing the membranes and dilating the cervix with tents and water-bags are procrastination in comparison with it. Those who have hurried delivery by the incisions into the cervix and vagina recommended by Dührssen have generally not made them until the cervical canal has been obliterated. If the internal os has

not been dilated it appears to have been the practice to open it up with tents or dilators, and then to hasten delivery by incisions. This is a far slower proceeding than Cæsarian section. It may be urged that if Dührssen's principles are applied to the full, and the lower segment of the uterus and vagina are cut open enough to allow the extraction of the child without waiting for dilatation, then delivery by the natural road may be accomplished as quickly as Cæsarian section. Possibly it may, but as yet it is not certain that vaginal Cæsarian section is less dangerous than the old Cæsarian section. Zweifel gives as a reason for preferring Dührssen's incisions that although Cæsarian section is a quicker method of delivery, yet the preparations take time. One cannot see why the antiseptic preparation of operator, instruments, and patient should take longer for one operation than the other. Döderlein gives as a reason against Dührssen's treatment that it is such a bloody and formidable thing that it cannot be done in private practice.

What are the facts as to Cæsarian section? Döderlein has collected reports of nineteen cases in which patients suffering from eclampsia were delivered by Cæsarian section. Of these eleven recovered and eight died. In fourteen there were no more fits after delivery; in five the fits continued. In two of the cases the reason why there were no more fits was that the patients were moribund when the operation was done and died shortly afterward; one of these had had no fit for twelve hours before the operation. It is to be noted, also, that eight of the patients whose fits ceased, and four of those in whom they continued, had been treated by morphine. There are to be added to these the since published cases of Schreiber, in which the fits continued, and of Zweifel, in which there were thirty fits after delivery. Here we have the effect of the most rapid possible delivery—twelve cases in which it is possible to think that rapid delivery did good, and seven in which it clearly did not.

Hillmann has collected the records of Cæsarian section for eclampsia down to a more recent date. He finds thirty-nine cases with twenty deaths. Of forty-one children, eighteen died and twenty-three survived. In eight cases fits occurred after Cæsarian section. Such a proportion as this makes the evidence in favor of the good effect of delivery far from decisive. It may also be said that Cæsarian section generally involves free bleeding, which our forefathers held was the sheet-anchor of treatment in eclampsia.

The result of the foregoing part of this paper has been purely negative. Herman thinks he has shown reason for supposing that a method of treatment widely recommended is not beneficial, and certainly not so beneficial as its advocates say.

A FURTHER CONTRIBUTION TO THE STUDY OF SUMMER DIARRHEA.

In the *New York Medical Journal* of April 26, 1902, KERLEY in discussing his plan for treatment of this malady says that calomel is preferred in a case in which there is vomiting or a tendency thereto, and, when the case is not particularly urgent, one-twentieth to one-tenth of a grain is usually prescribed at hourly intervals.

Castor oil is given in the acute septic cases with infrequent stools and without stomach involvement, in which a prompt washing out of the small intestines is desired.

Bismuth subnitrate was given in all of the cases treated. It was never given in less than ten grains every one or two of the waking hours, regardless of the age of the patient. When given persistently in this large amount it is a remedy of immense value. In order to be of service, however, it must produce black stools. In other words, if some of it is not converted into the sulphide of bismuth in the intestine it is without value. If it passes through the bowel unchanged no influence whatever will be exerted upon the intestinal contents. This happens in a small percentage of cases, and is explained in the absence of sulphuretted hydrogen in the intestine, which condition is due, doubtless, to the absence of pancreatic digestion. In such cases the sulphur is supplied in the use of precipitated sulphur, a one-grain powder being given with each dose of the bismuth; the bismuth is continued in the large doses until the child is ready for milk, and then the dosage is diminished one-half and continued until full feeding is possible.

The indications for the use of opium

are pain, tenesmus, and frequent stools. In a severe or even in an average case in which there is systemic poisoning, evidenced by fever and considerable prostration, four or five passages a day are desirable. The author looks upon this number of stools as maintaining drainage. When the case is one of intestinal infection with infrequent foul stools or no stools at all, active laxatives comprise the only medication. Many children are brought to an untimely end because of the idea that the number of the discharges—that is, the diarrhea—must be stopped. The physician's efforts are directed to this end with little or no attention to the diet and the nature of the intestinal contents, the cause of all the trouble.

As is the case with all good measures, irrigation of the colon has been overdone. Because a baby has diarrhea it does not follow that he must be irrigated. A child who is having from two to twenty loose, watery discharges in twenty-four hours is quite effectively washed out and does not require more. Time and again the writer has irrigated in these cases and removed nothing whatever. The cases which are benefited by the washing are those patients who have a moderate number of green mucous stools with or without blood; in short, the cases to be washed out are those in which there is something to be removed. Never wash the colon oftener than once in eight hours, rarely as often as this; once in twelve hours accomplishes considerable and does no harm. Too frequent irrigation causes straining, distention of the lower bowel, fissures of the rectum, and, if not very carefully done, injury to the mucous membrane of the descending colon. Various solutions have been used for irrigation. One is as good as the other if water enough is used, for it is the cleansing of the bowel which benefits the patient. Usually employ a normal salt solution. In case there is blood, a one-per-cent solution of tannic acid is used. It is questionable, however, whether it is of any more value than normal salt solution. The solution selected is used lukewarm. If there is high fever, use it as cold as 60° or 70° F.; in the very weak, with subnormal temperature and marked prostration, the solution is used at 110° F. Irrigation is carried on as follows: A soft-rubber catheter, No. 14 English, is attached to a fountain syringe, the bag of which should be held three or four feet above the patient's body. The child must lie on the back or left side, with legs well drawn up. The tip of the well oiled catheter is passed into the rectum. When an introduction of two inches has been effected, allow the water to pass in slowly. The water will distend the parts and facilitate the further introduction of the tube. Press the folds of the buttocks together until the colon is filled. This in a child of eighteen months of age will require from twenty-four to thirty ounces of water. When this, or a lesser amount, at least one pint, has passed in, allow the solution to run in and out at the same time.

The medical management of these cases of summer diarrhea among the tenement poor is important; but what is equally important, and a matter to which in a great measure our success is due, rests in the education of the mother. What these mothers chiefly fail in is cleanliness, and they are careless in caring for the food. They have no sense of appreciation of careful detail. It is manifestly desirable that the best milk within their means be given the child, and they are told where to obtain it; but an absolutely pure milk, if kept uncooked, exposed in an open vessel in a very indifferent and dirty ice-box, at a temperature of 60° F. or over, would become contaminated at once.

In order to prevent diarrheal disease in summer the child should be fed properly all the year round. The death-rate from this cause in June and early July is almost as large as in August; this is because the susceptible, the badly fed, those with chronic digestive disorders, fall easy victims at the commencement of the heated term. The poor mothers are very much interested in the children, and when they make mistakes they are errors of ignorance, not of intent. If cows' milk is used they are told to boil it as soon as received, to dilute it with a cereal water, and keep it on ice. They are also instructed in the care of the bottle and the nipple. In case a special article of diet is to be given, they are told how

to prepare it; written directions are given covering these points. Nothing is left to the memory. The mother is told, further, that she must wash her hands with soap and hot water before touching the baby's food for any purpose, and that there must be a vessel half full of water into which the soiled napkins are placed until washed. With the first sign of intestinal derangement, whether in winter or summer, they are taught to stop milk at once, to give a cereal water and a dose of castor oil, and they do it.

AMAUROSIS (ATROPHY OF THE OPTIC NERVE) AND ITS TREATMENT BY THE SUBCUTANEOUS INJECTION OF STRYCHNINE.

HASKET DERBY, the well known ophthalmologist, states in the *Boston Medical and Surgical Journal* of May 15, 1902, in a paper on this subject, his views in the following words:

"To sum up the whole matter, it is freely admitted that these cases are not brilliant as to result. But the malady is in itself so fatal, and has been regarded as so hopeless, that it seems to me the smallest chance of relief, whether temporary or permanent, ought not to be allowed to slip.

"The following conclusions are justifiable: (1) Strychnine is stimulant to the optic nerve. Even in normal eyes it slightly increases the acuteness of vision and widens the visual field. These effects are temporary (Fuchs). (2) In certain cases of optic nerve atrophy its local subcutaneous injection has, to say the least, coincided with an arrest in the progress of the disease, and has been followed by a somewhat increased acuteness of vision. Whether these effects are temporary or permanent, time and fuller statistics will show. (3) In a progressive case of this disease it is clearly our duty to state the above facts to the patient, and allow him to take the treatment if he is so inclined. (4) The strychnine should always be administered in the temple, and by subcutaneous injection."

A CLINICAL LECTURE ON THE NATURE OF DISCHARGES AND DOUCHES.

In the London *Lancet* of May 17, 1902, WINGRAVE describes the various states requiring a douche, and in the course of his paper states that in addition to its purely mechanical use a douche may be required for antiseptic purposes. But our most valuable antiseptics are precipitants of proteids, and therefore not thorough irrigants; consequently it is more often expedient to irrigate first with a solvent and use the antiseptic afterwards, as in the case of suppurative middle-ear disease. This need not, however, always be done, since biniodide of mercury, phenol, chinosol, and many powerful antiseptics are not only miscible with pure sodium sulphate, but when mixed the solution does not precipitate proteids so readily as a plain solution of the antiseptic would. This is a property of no slight importance. In the use of potassium permanganate where there is much mucin, as in the crusts found in atrophic rhinitis, a combination with sodium bicarbonate or biborate will be found to afford a very efficient deodorant douche with or without sodium sulphate. Boric acid is so feeble an antiseptic, even by itself, that its combinations need no serious consideration. This, however, does not apply to chinosol, which, mixed with sodium sulphate, affords not only a clear solution, but one having high solvent and antiseptic properties.

It will thus be seen that few reliable antiseptics when used by themselves actually conform to the essentials of a perfect douche, but when combined with a neutral salt their efficiency is undoubtedly increased, this being due in a great measure to an increase in penetrative power.

A protesting word may here be not superfluous with regard to many popular formulæ of various inappropriate salts, which are employed as antiseptic douches. These are not only extremely irritating to the mucous membrane—especially the nasal—sometimes causing great discomfort, but their solvent and antiseptic properties are so problematical that they should be recommended only as deodorants, and in those cases which demand stimulating as an adjuvant to the routine solvents, *e.g.*, atrophic rhinitis. When available an economical and efficient douche in cases of atrophic and fetid rhinitis is to be found in sea-water. It should be thoroughly well boiled, decanted, and used at a temperature from 60° to 70° F. A pinch of sodium bicarbonate to the pint may be added when the crusts are very firmly adherent. When employed for diagnostic purposes the douche should be transparent and colorless, hence

liquor carbonis detergens, creolin, permanganates, etc., are to be avoided. Likewise, too, it is inadvisable to employ any precipitant such as mercuric chloride for exploratory irrigation when the exit passage is likely to be minute—*e.g.*, per Leichwitz cannula in the case of suspected maxillary sinus disease.

Although far from complete the foregoing selection may be considered as fairly representative of the materials frequently employed as douches, and however true it may be that experience eventually leads us to select that which is most serviceable, the application of our knowledge of physiological chemistry will doubtless not only facilitate that selection, but also guide us to still further improvements. While disclaiming any intention of suggesting a universal irrigant, experiments in the laboratory and clinical observation amply emphasize the fact that we have in the neutral salts, especially sodium sulphate, by far the most reliable basis for an irrigant, especially when pus predominates, but in many instances already referred to the addition of an alkaline salt will render it even more effective. Whatever formula is employed it must obviously be modified according to the clinical circumstances calling for its use, and efficiency will be insured by practically appreciating the teachings of the physiological laboratory.

The appended formulæ are based upon the foregoing principles, having all been thoroughly tested chemically and clinically, and although selected chiefly for use in connection with diseases of the ear and upper respiratory tract, they are equally applicable to general surgery.

1. Sodium sulphate, from 1½ to 3 drachms; water to one pint (20 fluidounces), from 1 to 2 per cent.

2. Sodium sulphate, from 1½ to 3 drachms; sodium bicarbonate, 40 grains; water to one pint.

3. Sodium sulphate, from 1½ to 3 drachms; borax, 40 grains; water to one pint.

4. Sodium sulphate, from 1½ to 3 drachms; sodium bicarbonate, 40 grains; glycerin of carbolic acid, 45 drops; water to one pint. *Note.*—Instead of glycerin of carbolic acid, absolute phenol 9 grains, or No. 1 carbolic acid, may be used. Heat to 155° F.

5. Borax, 40 grains; bicarbonate of soda, 40 grains; glycerin of carbolic acid, 45 drops; water to one pint (diluted Dobell's solution).

6. Sodium sulphate, 1½ drachms; chinosol, 10 grains; water to one pint.

7. Sodium sulphate, 1½ drachms; perchloride of mercury, 2 grains; water to one pint (1-in-5000).

8. Sodium sulphate, 1½ drachms; red iodide of mercury, 2 grains; sodium iodide, 2 grains; water to one pint (1-in-5000).

9. Sodium sulphate, 1½ drachms; potassium permanganate, 2 grains; water to one pint.

10. Sodium bicarbonate, 40 grains; potassium permanganate, 2 grains; water to one pint. *Note.*—Borax (40 grains) may be used instead of sodium bicarbonate.

11. Solution of calcium chloride (P. B.), 6 fluidrachms; water to one pint.

Notes.—The pure exsiccated sulphate of sodium should always be used in preference to the ordinary crystalline salt. Bicarbonate is preferable to carbonate of sodium. Hot water, whenever convenient, should be employed to make the solutions. Solutions of phenol should be heated to 155°.

No. 1 is to be used as a simple irrigant for pus; Nos. 2 and 3 when mucus is present, or when the discharge is inspissated; Nos. 4, 5, 9, and 10 for inspissated fetid mucus or "crusts;" Nos. 6, 7, and 8 as antiseptics; and No. 9 as a deodorant. No. 11 is chiefly employed for its hemostatic property.

PERINEAL LACERATION DURING FORCEPS DELIVERY PREVENTED BY ADHESIVE STRAPS.

Adhesive straps have been employed by NOBLE (*American Journal of Obstetrics*, February, 1902) in six forceps deliveries with perfect satisfaction, using them in cases in which the perineum appeared to be in imminent danger. They were applied after the occiput had passed under the pubic arch and before the period of crowding was reached—that is, before the pelvic floor was very much distended.

After thoroughly cleansing the parts with soap and water and such antiseptic solutions as may be desirable, the perineum and buttocks should be sponged with alcohol to remove moisture. The application should begin with straps one and a half inches wide and eighteen to twenty-four inches long, attaching one extremity well upon the side of the labium and deep into the sulcus between it and the thigh, then passing downward

and across the median line just behind the posterior commissure. It is continued on the opposite side round behind the buttock, and attached to the hip at or about the sacroiliac synchondrosis. The second strap is passed in a similar manner on the other side, each one to be applied with as much tension as possible, drawing the labium well downward and the buttock upward. The third strap passes horizontally across the perineum at a level with the posterior commissure, and is fastened on either side to the flexed thighs and hips. As the delivery proceeds the perineum will extend by stretching the skin beyond the edge of the straps, but chiefly by rolling the posterior vaginal wall out in advance of the head. When it has extended as much as one-half or three-fourths of an inch beyond the straps, or appears to be drawn tightly across the presenting parts, another horizontal strip of adhesive plaster is applied, which as a rule will be sufficient to complete the labor.

The straps take the strain off the perineum and change the direction of the presenting parts more or less forward to the normal or axis of the outlet by forcing it firmly against the lower anterior surface of the pubic bone, permitting delivery through a smaller orifice than can be effected when the head is delivered in the abnormal or axis of the bony outlet.

The straps are recommended for protecting the perineum, but not for preventing tears in the vagina above the perineum, such as are produced by disproportion and ill-constructed forceps or unskilled management of the latter.

TREATMENT OF GONORRHEAL URETHRITIS.

The chief drawback to the abortive treatment of gonorrheal urethritis, according to HEATON *(Birmingham Medical Review,* February, 1902), is its want of success.

With regard to the general management of a case of gonorrhea, the first essential is complete physical and sexual rest. Hot hip baths are of great service at the height of the inflammation, and assist materially in relieving pain by relaxing the periurethral tissues. A well fitting suspensory bandage should be worn. As regards diet, the main object in the early stage, and also while the inflammation is at its height, is to keep the patient on a reasonably low diet, and to render his urine as little irritating as possible to his inflamed urethra. Alcohol during treatment and after it should be forbidden. Absolute cleanliness is of the utmost importance. The prepuce must be well retracted twice every day, and its inner surface and the glans penis bathed with warm water or boracic lotion.

During the incubative stage and the early part of the acute inflammatory stage, the various oleoresins, so useful in the later stages, should be avoided. Internal medication should begin with a brisk purge. Where there is fever and much constitutional disturbance, aconite given in small doses with an alkali will be found very useful. In less severe cases Heaton usually gives a mixture containing bicarbonate of soda, a little sulphate of magnesia, and some tincture of hyoscyamus with either infusion of buchu or liquid extract of kava-kava. The mixture renders the urine less acid and acts as a sedative to the urethral mucous membrane. Sleeping on a hard mattress prevents erections, but the patient should eat a small and very early supper, and should be given some device to prevent him from sleeping on his back. As sedatives chloral, bromides, cannabis indica, camphor, and opium are all useful. A very efficient suppository is one containing camphor 2 grains, extract belladonna 1 grain, extract opium 2 grains, put in the rectum just before going to bed.

When the inflammatory stage is beginning to abate, and during the whole of the stage of gleet, the various oleoresins form the physician's sheet-anchor. Sandalwood oil may be placed first because it appears to be the most efficacious and is least likely to disturb the digestion. Cubebs seems to be even more powerful than copaiba as a stimulant to the urethral mucous membrane, and is especially useful in the more chronic cases of gleet.

As to local treatment, during the incubative stage the urethra is best left entirely alone, if the case is one of undoubted gonorrhea. When there is still a doubt as to whether the trouble may or may not be a simple urethritis, limited to the anterior portion of the urethra, Heaton orders an iodoform bougie (iodoform, 5 grains; ol. eucalyptus, 1 minim; cocaine hydrochlor., 1-4 grain; ol. theobrom., q. s.). Such a bougie passed into the urethra each night

for three or four successive nights does certainly seem, says Heaton, to quickly cure a simple urethritis. It is in this stage that the abortive method of treatment, to be of avail, must be tried. Heaton is not in favor of abortive treatment with repeated daily injections.

When the discharge is profuse, some very mild antiseptic mixed with an anodyne is to be used as an injection to wash the pus out of the inflamed canal. Permanganate of potash, 1:5000, or weak boracic lotion with a half or one per cent of cocaine in it, makes an admirable detergent injection. Perchloride of mercury, however dilute its solution, is apt to cause a good deal of irritation at this stage. Mercurol may be occasionally tried instead of the perchloride.

A most useful injection, and one that can be employed both early and late, is permanganate of zinc. It must be used in very dilute solutions in the early stages (gr. 1-8 to water f℥j), and this strength may be increased as the inflammation subsides and the stage of gleet is entered.

No undue force should be used in injecting, and not more than two drachms of fluid should be used at each injection lest the deeper part of the urethra and bladder be infected. Before using the injection the patient should always empty the bladder, and thus flush his urethra, and the injection should be allowed to remain in the urethra a minute or two.

When the discharge becomes thinner and less purulent, the ardor urinæ less pronounced—in fact, at the beginning of the third stage of the disease—then is the time to begin astringent injections. The local treatment from now onward becomes the most important.

The solutions which have proved of most value in the hands of Heaton are:

Permanganate of zinc, in strength of 1-8 gr. ad ℥j increased up to gr. 1-2 ad ℥j.

Sulphocarbolate of zinc, ij-iij gr. ad ℥j;
Sulphate of zinc, gr. ½-j gr. ad ℥j.

Another useful injection is:

Zinci sulphat., gr. ½;
Plumbi sabacet., gr. j;
Tr. catechu, min. x;
Aq., ℥j.

Or, a mixture of the three sulphates:

Cupri sulphat., gr. ¼;
Zinci sulphat., gr. ½ ad ℥j;
Ferri sulphat., gr. j.

In the more obstinate cases there may be recourse to dilute solutions of nitrate of silver, beginning with one-fourth grain and cautiously increasing the strength.

In one of the above ways, in the large majority of cases, a cure may be brought about in five or six weeks, provided the patient patiently and conscientiously carries out the physician's instructions. There is a small percentage of cases, however, where a discharge persists in spite of all treatment. This discharge may owe its origin to a chronic unhealthy inflammation of the mucous membrane of the whole length of the urethra, but particularly of its deeper parts, the membranous and prostatic portions; some slight stricture with ulceration of the membrane behind it; so-called granular patches in the urethra; inflammation, or abscess in the lacunæ or follicles entering into the urethra; and chronic inflammation of the prostate or its ducts.

A large-sized cold metal bougie should first be passed if the ordinary astringent injections have been given a fair trial and have failed. This at once detects any narrowing of the urethra, gives evidence of any specially tender point, and its occasional passage seems to have a beneficial influence in some cases on the urethral mucous membrane and assists in its cure.

By the urethral endoscope, to be tried next, there can be diagnosed and locally treated the cause of the gleet if it exist in any part of the urethra anterior to the bulb, and, in some cases, as far as the membranous urethra. The most useful of the applications that may be used with it is a strong solution of nitrate of silver, gr. xv-xxx ad ℥j, or protargol from 5 to 20 per cent. Such applications should be made two or three times a week, and a mild astringent injection should be given between the applications.

If the cause of the trouble lies deeper than the portion that can be examined by the endoscope, the occasional passage of a cold metal bougie may set up a more healthy action, and excellent results have been obtained from the daily use of medicated urethral bougies made so that the active drug is applied to the deeper portion of the urethra.

The instillation of a few drops of some strong astringent with a special deep urethral syringe is another method. A method which sometimes cures suitable cases is a

daily irrigation of the urethra with a large quantity of some mild astringent fluid.

When the gleet is due to a chronic inflammation of the prostate gland and its ducts, Heaton, in addition to the remedies alluded to, gives every night a rectal suppository of extract of belladonna 1 to 2 grains and ichthyol 2 grains, in a basis of glycogelatin.

Medicaments in proper strength, if applied directly to the actually inflamed or ulcerated spots, will sometimes quickly succeed, where months or years of an empirical mode of treatment by injections has failed.

The treatment outlined above fairly represents that which is received with most favor by the majority of English surgeons, and is of interest from this standpoint rather than from its novelty.

BLADDER EXSTROPHY AND URETER TRANSPLANTATION INTO THE RECTUM.

By his extraperitoneal method, PETERS (*Canadian Journal of Medicine and Surgery*, April, 1902) has obtained very satisfactory results in three out of four cases of transplantation of the ureters into the rectum for exstrophy of the bladder. The operation in the third case was followed by death on the fifth day, from acute ascending infection.

The first step in the operation is to insert a soft-rubber catheter, about No. 5 to 7, into each ureter, passing it in about 2½ or 3 inches, so that its upper end reaches beyond the curve of the ureter over the brim of the pelvis. The catheters are stitched in by passing a very fine silk suture through the wall of the catheter, and then through the wall of the papilla, and are allowed to remain in position for from twenty-four to sixty hours.

The next step consists in dissecting out the distal ends of the ureters with a fair-sized rosette of the adjacent mucous membrane and muscle wall of the bladder. The safest and easiest method is to commence the dissection at the portion of the papilla nearest the pubes; here the ureter will be uncovered by the peritoneum. A cellular space is soon entered, through which the ureter with its contained catheter can be easily felt. With the finger in this space, the dissection is proceeded with, care being had not to injure the peritoneum, which lies very close to the ureter at the upper part. It will be found when the circular rosette of bladder tissue has been completely separated that the remainder of the ureters can be easily dissected free, and, without any traction, care should be taken to follow it back in its curve, so that, when transplanted into the rectum, it will run practically in a straight line from the brim of the pelvis to its new situation in the wall of the rectum.

Attention is next directed toward laying bare the lateral wall of the rectum, largely by blunt dissection. The process is very greatly facilitated by the presence of one finger of the operator or his assistant in the bowel. The absence of the pubic arch renders it comparatively easy to lift the rectum toward the wound of operation, and thus bring it almost to the surface. If care is taken to keep well to the lateral aspect of the pelvis during this dissection, and to approach the rectum from this direction, the peritoneum is not endangered; but this portion of the operation should be conducted with extreme care, as it is difficult to tell how low down the peritoneum may reach in these abnormal cases.

The point selected for planting the ureter is that on the lateral aspect of the bowel just above the internal sphincter. The ureter can be brought to this position without the least trouble.

Having thus determined upon and exposed the seat of implantation, a pair of forceps is passed into the rectum, and pressed against the selected spot. A slight cut is now made from the external wound upon the end of the forceps; this is forced through, and the little wound dilated very accurately, so that it will receive snugly and yet without compression the ureter with its contained catheter. The forceps is then passed through and made to seize the end of the catheter, and this is drawn through the rectal wound and out of the anus. The forceps is then passed back beside the catheter through the same opening and made to grasp lightly the distal end of the ureter, or rather its rosette of bladder tissue, and this is now carefully conducted through the opening and made to protrude into the rectum. Very great care should be taken not to injure the ureter during this operation.

The same tactics are repeated upon the opposite side. Thus the ureters are drawn through so that their distal ends, together with the rosette of bladder tissue, are made to project into the rectum as two prominent

papillæ. The catheters, of course, pass out through the anus, and are directed into the mouths of separate bottles containing a solution of carbolic or boracic acid. In this way one can ascertain whether both kidneys are working, and if one catheter should become plugged (as happened in one case) with urates or phosphates, it may be immediately withdrawn.

No effort is made to stitch the ureters into position. In order, however, to support the delicate ureters in their new position, and to prevent the injurious effects of any extravasation that may occur from the rectum to the wound in the pelvic cellular tissue, the wounds are packed on each side fairly firmly with iodoform gauze. This is left in position for two or three days, and when removed it is found that the parts fall together without, as a rule, allowing any extravasation from the rectum; or if there should be any, as happened in the third case, the gauze affords sufficient drainage, and the wound heals quickly by granulation.

THROMBOSIS OF THE LEFT FEMORAL VEIN AFTER LAPAROTOMY.

RIEDEL (*Archiv für Klin. Chirurgie*, Bd. 66) has repeatedly observed thrombosis of the left femoral vein following laparotomy. Two of the cases developed after fixation of the right kidney, one after excision of a right-sided omental tumor, one after extirpation of an umbilical hernia, one after operation on a femoral hernia, four after appendicitis operations, and one in a case of appendicitis that did not undergo operation. The only case of thrombosis of the right femoral vein was seen after the separation of adhesions in the region of the cæcum. Embolism of the pulmonary artery occurred in two cases with fatal results.

Frequently the thrombosis began with pain and swelling in the calf of the leg, and the process then extended upward; one case originated in the external iliac vein, and the remaining cases in the femoral vein just below Poupart's ligament. The thrombi, as a rule, were not of the infectious type.

Thrombosis was observed most frequently in the cases in which ether was used as the anesthetic. It is quite possible that the overstimulation of the heart during etherization is later followed by a period of cardiac weakness, which is productive of venous disturbances and favors the formation of thrombi. The above explanation would, at least, partially account for the cases of thrombophlebitis which develop immediately after operation under ether narcosis.

The non-infectious cases which develop at a later period Lennander has ascribed correctly to the long-continued maintenance of the horizontal position by the patient. Lennander supposed the preponderance of left-sided femoral thromboses following right-sided operations was due to faulty pressure of the bandages and fecal stasis in the sigmoid flexure. This theory is erroneous, for the real cause lies in the different anatomical arrangement of the two iliac veins. The right common iliac artery crosses the right common iliac vein at a very acute angle, causing but slight pressure on the vein; whereas the right common iliac artery anteriorly and the middle sacral artery posteriorly cross the left common iliac vein at nearly a right angle on the same level, and exert great pressure on the encompassed vein. In addition, the left external iliac artery crosses the left common iliac vein in an oblique direction. On the left, therefore, the common iliac vein is subjected to a threefold more or less right-angled arterial pressure; while on the right only slight pressure is caused by a single artery crossing at an oblique angle. This difference in the anatomical relations of the two veins produces sufficient obstruction in the left common iliac to account for the relatively greater frequency of left-sided thrombosis when the patient occupies the horizontal position.

Since adopting Lennander's suggestion of elevating the foot of the patient's bed after laparotomy operations, only one case of thrombosis occurred. The patient was extremely anemic, and probably developed the affection in spite of the elevated position of his legs, but in many other cases thrombosis was prevented.

The inverted posture is not agreeable to patients, because it interferes with diaphragmatic breathing, too much blood goes to the head, and it is difficult to swallow food. Elevation of the lower extremities by means of wedge-shaped pillows may be substituted when patients cannot bear elevation of the foot of the bed, but this position increases the risk of bed-sores over the sacrum. When more statistics have

been collected over the relative frequency of thrombosis on the two sides after laparotomy, it will probably be found sufficient to elevate the left leg alone as a preventive measure.

THE IMPORTANCE OF THE OMENTUM IN PLASTIC SURGERY.

HERMES *(Deutsche Zeitschrift für Chirurgie,* November, 1901) concurs with the views of other surgeons in regard to the good results derived from covering the line of suture in wounds of the hollow viscera with omentum in order to prevent leakage.

His own results in many difficult and complicated cases have been very gratifying. In one case that was operated upon for gastric ulcer and stenosis of the pylorus, a large defect was produced in the stomach wall. The sutures cut through the friable edges of the wound, and they could not be depended upon to close the opening. The omentum was stitched over the wound, a gastroenterostomy performed, and the abdomen closed. The patient died ten days later of double pleuropneumonia, and autopsy showed that the gastric wound was completely healed and that no traces of peritonitis were present. In another patient, who had an extensive gastric carcinoma, a 2½-inch rent was accidentally produced in the stomach wall. The absolutely unreliable line of sutures in the diseased tissue was covered with omentum, and the wound healed without a single complication.

In only one case out of the many in which the omentum was employed to cover the line of suture did the patient develop a fecal fistula. In this instance a traumatic perforation of the intestine and suppurative peritonitis were present, and the sutures probably failed to hold because of the decreased vitality of the tissues.

The omentum, when used to cover the line of union of intestinal anastomoses by means of the Murphy button, safeguards against the formation of a fecal fistula from the cutting through of the button before firm adhesions have formed.

The omentum may be employed in a similar manner to reënforce the line of sutures in a great variety of cases. It has likewise been employed successfully as the sole means of closing perforations of the stomach when sutures would not hold in the edges of the wound.

It has also been proven on animals that defects in the stomach and intestines can be closed by simply stitching the omentum over the wound. In such cases the omentum quickly adheres to the serous coat and an uncomplicated healing takes place. The wound later diminishes in size, and the inner surface of the omentum becomes covered with epithelium from the mucosa.

The following case illustrates another method in which the omentum may be used with advantage. The patient had double ovarian cysts and an abscess in Douglas's cul-de-sac. During operation a large perforation was discovered in the anterior wall of the rectum. Owing to the situation of the perforation, the necrosed condition of its edges, and the immobility of the rectum, sutures could not be introduced. The omentum was drawn down, packed over the opening, and held in place by Mikulicz's tampon introduced through the lower angle of the abdominal incision. Despite the presence of pus at the time of operation, there was never any fecal discharge and the wound healed kindly. The drainage track closed completely within six weeks, and the patient was saved from the disagreeable consequences of a fecal fistula, which could not have been avoided except for this procedure.

A CASE OF MULTIPLE GUNSHOT WOUNDS OF THE SMALL INTESTINES.

FRANCKE *(Archiv für Klin. Chirurgie,* Bd. 66) treated a twelve-year-old girl who had received a penetrating wound of the abdomen from a pistol bullet. The patient was admitted to the hospital four hours after the accident. She was in a state of collapse and had all the signs of a high-grade anemia. Pulse 120, weak, and irregular; respirations rapid. Patient was perfectly conscious and complained of moderate pain in the abdomen. Vomiting occurred several times and consisted of the normal gastric contents. Abdominal muscles were rigid. The wound of entrance measured one-fifth of

an inch in diameter and was located just below and to the left of the umbilicus. No wound of exit. Dulness was noted on percussion over the dependent portions of the abdomen. Liver dulness, normal in outline.

A diagnosis of internal hemorrhage and intestinal injuries was made. The patient was etherized and operated upon immediately. The abdomen was opened by a median incision, extending from the symphysis to a point just above the umbilicus. Several gas bubbles escaped when the peritoneum was incised. The abdomen was filled with blood from the injured mesenteric and intestinal arteries. The bullet had buried itself in the psoas muscle below the fourth lumbar vertebra and was not removed. By systematic searching of the contracted gut, twelve round bullet wounds with prolapsed mucous membrane were found in the ileojejunal region. Wounds of entrance and exit could not be differentiated. There were no adhesions between the coils of intestines; no extravasation of feces.

Two of the wounds were closed by a double layer of sutures. The remaining ten wounds were all situated in a loop of gut twenty inches long, and were so close together that the injuries could not be repaired by suture of the individual wounds. The loop of gut therefore was excised. Internal anastomosis with celloidin sutures was employed to reunite the divided gut, as this procedure was considered safer than an end-to-end anastomosis by means of suture or the Murphy button. After the bleeding was checked, the abdomen was closed without drainage.

The case progressed favorably. Vomiting occurred but once, and it was then due to the patient getting out of bed on the second day after the operation and drinking a large amount of water. Flatus was expelled on the second day. The bowels moved spontaneously on the third day, and were regular thereafter. On the fourteenth day a psoas abscess, arising from the region of the retained bullet, was opened above Poupart's ligament. Otherwise convalescence was uninterrupted, and the patient was completely well five weeks after the original operation.

The recovery in this case is ascribed to the strong constitution of the patient, the emptiness of the gut at the time of the accident, the minimum handling of the peritoneum and intestines, and the conservative use of ether during the operation.

Siegel has shown by statistics that the mortality of operations for gunshot wounds of the abdomen rises rapidly with the increase of the time that elapses between the receipt of the injury and the performance of the operation. A mechanical reason for this difference in mortality is suggested by the conditions observed in the above case. Directly after the receipt of a gunshot wound, the intestines contract reflexly and the wound is completely closed by the prolapsed mucous membrane, and no leakage of intestinal contents can occur. After a few hours the intestine becomes paralyzed and dilates. The prolapsed mucous membrane then keeps the wound in the gut open and favors leakage, with its disastrous sequelæ.

TETANUS FOLLOWING THE SUBCUTANEOUS INJECTION OF GELATIN.

LORENZ *(Deutsche Zeitschrift für Chirurgie,* November, 1901) reports two cases in which symptoms of tetanus developed after the subcutaneous administration of solutions of gelatin.

The first case was a man, aged sixty-two, who suffered from vesical tenesmus and profuse hematuria. His urine had a decided reddish color and frequently contained shreds of tissue. He was given 200 grammes of a one-per-cent solution of gelatin by subcutaneous injection in both thighs. The following day an erythema appeared over the regions of the injections, and the patient's temperature rose to 102°. By the third day the temperature fell to normal. The erythema disappeared from one thigh, and was paler in color on the other, but extended over a larger area.

On the seventh day the patient began to suffer from dysphagia. All efforts at swallowing were still painful on the following day, and the patient could separate his jaws only half an inch. In addition cramp-like pains developed in the epigastrium and radiated to the muscles

of the neck and shoulders. The head was drawn backward, and the neck was rigid.

On the ninth day the temperature again rose to 102.4°, the muscular spasms still continued, and the case terminated fatally.

Autopsy revealed an extensive papillomatous tumor of the bladder; atrophic cirrhosis of the liver; splenic tumor; hyperemia of the lungs; anemia of the brain, and edema of its surface; and a thickening of the cerebral meninges.

The second case occurred in a patient, fifty-eight years of age, who was operated upon for a carcinoma of the rectum. The tumor was exposed by a resection of the coccyx, the rectum was excised, and an artificial anus formed in the sacral region. Subcutaneous injections of 100 grammes of a two-per-cent solution of gelatin were administered several hours after operation in order to check a severe consecutive hemorrhage. The bleeding ceased, and the case pursued a normal course until the fifth day after operation, when the patient developed tonic spasms of the cervical muscles, dysphagia, and later spasm of the muscles of the extremities. The temperature rose to 100.4° the following day. Sloughing of the superficial tissues was noted over one of the situations in which the gelatin was injected. The muscular spasms continued and finally involved the diaphragm. The patient died within twenty-four hours after the onset of the above symptoms.

Autopsy disclosed the presence of blood-clots in the pelvis; degeneration of the heart, liver, and kidneys; and edema of the brain, but there was no evidence of spinal meningitis.

Owing to the care that was exercised in giving the injections, it is highly improbable that a bacterial infection occurred in these two cases.

A suspicion was entertained that the solutions might have contained chemical impurities, or that the gelatin had decomposed during sterilization. A portion of the gelatin solution used on the second patient, as well as other fresh solutions, were injected into the veins, subcutaneous tissues, and the peritoneal cavities of rabbits, in the hope of ascertaining the cause of the fatal results, but none of the animals developed any abnormal symptoms.

Georgia has reported a similar fatal case that developed an abscess at the site of a gelatin injection. Examination of the pus from his case for the tetanus bacillus was negative, but when the pus was injected into a rabbit it produced tetanic spasms and the death of the animal.

A CONTRIBUTION TO THE SURGERY OF THE POSTERIOR MEDIASTINUM.

ENDERLEN (*Deutsche Zeitschrift für Chirurgie*, November, 1901) reports a case in which an esophagotomy was performed for the removal of a set of false teeth which the patient had swallowed one month previously. The teeth lodged in the esophagus at a point thirteen inches distant from the lips. The patient could not partake of solid food and was gradually losing weight. All attempts at extraction of the teeth with the usual esophageal instruments were ineffectual and only resulted in profuse hemorrhage, severe pain, and a febrile reaction. The abdomen was opened and an incision made in the stomach, but it was found impossible to remove the teeth safely by this route. A Witzel's gastrostomy was then performed and the abdominal incision closed. The patient was next turned on his left side and the esophagus was approached from the rear. The ribs on the right side of the chest were exposed by turning back a rectangular flap whose base extended from the third to the ninth dorsal vertebra. The fifth, sixth, seventh, and eighth ribs were resected for a distance of three to four inches. The intercostal muscles were divided, and the pleura was carefully dissected loose. The pleura was torn in two places and the lung collapsed slightly, but no threatening symptoms appeared. An esophageal sound was introduced as far as the foreign body to serve as a guide, and the esophagus was incised after being exposed by careful dissection. The plate of teeth was partially embedded in the wall of the esophagus and was removed with difficulty. A crushing of the edges of the wound was unavoidable; for this reason and because of the febrile condition the esophagus was not closed by sutures. A Mikulicz tampon was introduced and the muscular flap sutured in position.

The patient bore the operation satisfactorily. His strength was maintained by nutrient enemata and by feeding through the gastrostomy wound during the first ten days after operation. Thereafter a portion of the liquid nourishment was given by the mouth.

Fluids escaped from the esophageal wound for nine months, but the fistula finally closed spontaneously. The pneumothorax, resulting from the perforations in the pleura, gradually disappeared after operation. The gastrostomy tube was removed at the end of seven weeks and the fistulous tract permitted to close. A subphrenic abscess developed during convalescence, which was cured after two operations. It is quite possible that this abscess might have been avoided if feeding exclusively by the gastrostomy fistula had been persisted in for a longer time.

Within ten months of the original operation all the wounds had healed and the patient felt perfectly well. He had gained twenty-five pounds in weight and could eat any kind of food. The largest size stomach tube could be introduced without difficulty.

Enderlen made a careful study of the anatomy of the posterior mediastinum and reviewed the literature on the various operations in this region, and he has arrived at the following conclusions:

1. The relation of the esophagus to the aorta, the bodies of the vertebræ, and the folds of the pleura normally varies to a certain degree in different individuals.

2. Owing to its anatomical relations, the esophagus above the level of the bifurcation of the trachea can be more readily exposed by a left-sided operation, but opposite the fifth and sixth dorsal vertebræ it is more accessible in right-sided operations. Below this level it may be approached from either side before it passes through the diaphragm. A curved or rectangular flap with its base over the vertebræ, combined with a resection of the ribs, produces the minimum amount of injury to important structures, and affords the best exposure of the esophagus.

3. The number of pathological conditions of the posterior mediastinum that can be successfully treated by operation is limited. The chief ones are: (*a*) Foreign bodies in the esophagus in which all other means of extraction have failed, or in which a perforation is present; (*b*) rare cases of diverticula of the lower portion of the esophagus which resist palliative treatment and yet are not very adherent to neighboring tissues.

4. Operations on the esophagus should be preceded by a gastrostomy.

5. Incised wounds of the esophagus can be closed by suture, but lacerated and contused wounds must be treated by drainage.

6. Wounds of the pleura are best treated by tampons during the operation and by suture at its conclusion.

7. The following conditions of the posterior mediastinum may also require surgical interference: (*a*) Suppurative processes arising from the esophagus or the vertebræ; (*b*) pulmonary abscesses in this region.

Operation by the posterior mediastinal route is contraindicated in stricture and tumors of the esophagus.

SUBCORACOID DISLOCATION TREATED BY SUTURING THE HEAD OF THE HUMERUS TO THE ACROMION.

After various methods of reduction had been tried in vain in the case of an old subcoracoid dislocation exhibited by an engineer, aged forty-three, who had been run over, Beck (*Medical News*, March 1, 1902) made a nearly semilunar incision which began at the acromion, and running over the intertubular sulcus, was extended vertically alongside the anterior surface of the arm. Thus both the joint and the acromion were exposed. After extensive and careful dissection of adhesions, the head of the humerus was rotated into its glenoid cavity. There was a pronounced tendency to forward displacement which could not be overcome by additional exposure. The head of the humerus, therefore, was fastened in the cavity by suturing it to the acromion after drilling a hole through the acromion as well as through the head of the humerus. On boring, the head was found to be very soft, a fact which was also illustrated by the light shadow of the skiagram. The skiagram, taken two weeks after the operation, showed the humerus in good position. There was no reaction and the result appears to be secured.

Beck thinks that this procedure is far preferable to the resection of the head of the humerus, as advised by many sur-

geons. No force being required, laceration of muscles, blood-vessels, and nerves is easily avoided.

THE CAUSE OF DEATH IN STRANGULATION OF THE SMALL INTESTINE.

ALBECK *(Archiv für Klin. Chirurgie,* Bd. 65) reports fifty-one fatal cases of strangulation of the small intestine, collected from the autopsy reports of hospital records. Of the thirty-two cases that were operated upon, there was perforation of the intestine in two, perforation occurred during the operation in one, and in another a perforation was found at autopsy that was not discovered during operation. Suppurative peritonitis was present in four cases, fibrinous peritonitis with cloudy exudate in two, and in one a fibrinopurulent peritonitis, which was not present at the time of the operation, was found at autopsy twenty-four hours later. Eight patients had mild fibrinous peritonitis, and in the remaining thirteen inflammatory changes of the peritoneum were absent.

Of the nineteen cases that did not undergo operation, perforation of the gut was present in one, suppurative peritonitis in three, fibrinous peritonitis confined chiefly to the loop of the strangulated intestine in nine, and peritonitis was absent in six.

The patients who had suppurative peritonitis, and perhaps also those who had fibrinous peritonitis, probably died as the result of an infection from the bacteria of the intestinal canal. Peritonitis is generally recognized as a cause of death in these cases, but the exact conditions under which the bacterial infection can occur have been variously described by different authors. Experimental evidence and bacteriological examinations of the fluid from the sacs of thirteen cases of incarcerated hernias, however, seem to prove that bacteria cannot wander out from the alimentary canal unless a necrosis of the intestinal wall is present.

An artificial strangulation of a loop of the small intestine was produced in several animals in order to ascertain the cause of death in the cases in which peritonitis is absent. The experiments apparently showed that the animals, in which a fatal peritonitis did not develop, died as the result of an intoxication from the intestine. These animals presented the same clinical symptoms and pathological changes that occur in man. It is therefore probable that patients die from the same form of intoxication. The absorption of the poison is favored by the necrotic changes that are found in the mucosa.

In another series of cases an infusion was made from the contents of the strangulated loop of gut, and after being passed through filter-paper, was injected into animals of the same species. The inoculated animals exhibited the same clinical symptoms with profound collapse that are seen in the last stages of intestinal strangulation in patients and animals.

Further experiments showed that the poison probably arises from a process of putrefaction, and that bacteria play no essential part in its formation. The poison is soluble in water, and its virulence is not affected by boiling nor by being passed through a Chamberland filter.

From the fact that the peritoneal fluid from cases of intestinal strangulation can be injected into the abdominal cavities of animals without the production of any abnormal symptoms, it would seem that the poison does not leak through into the peritoneal cavity, but is absorbed directly from the intestinal canal. These experiments apparently prove:

1. That death in cases of strangulation of the small intestine is often brought about entirely by an intoxication from the intestine without a peritonitis being present.

2. The poison is absorbed not only from the intestine on the proximal side of the strangulation, but also from the strangulated loop itself, and in many cases the latter is the chief source of the poison.

SIMPLE AND EFFECTIVE ANTISEPTIC DRESSING.

After years of research for a simple, effective surgical dressing, SHARPE *(New Orleans Medical and Surgical Journal,* March, 1902) believes he has found it in two remedies.

There is first prolonged and thorough washing with soap and water as hot as can be borne, and then the application of a chemical compound of pure gum camphor and pure white crystal carbolic acid, triturated to make a saturated solution of the camphor in the carbolic acid. The result is a clear, heavy, oily liquid,

with an aromatic, pleasant, camphoraceous odor. When made correctly it is perfectly bland, not toxic, and outside of a momentary stinging is non-irritating. It is quite a local anesthetic, and is the best all-around antiseptic and aseptic dressing Sharpe has ever used. He has used it successfully in all conditions and classes of wounds about the body, except the eye. As it is very stimulating, it might possibly do harm in some cases.

The remedy is soluble in olive oil, and for after-dressings it is generally used in solution, in proportion of one in three to six of the olive oil. It evaporates on exposure to air, and the oil prevents this to a great extent, thus lessening the necessity of too frequent dressings.

For burns the oily solution is very soothing, and the remedy excellent to stimulate healthy granulations. Scarcely any odor is noticed even during considerable sloughing of tissues. It is a good local application in eczemas, tetter, erysipelas, etc.

NEEDLESS LAPAROTOMIES.

Eight cases of needless laparotomy are reported by MUNRO *(Boston Medical and Surgical Journal,* Jan. 16, 1902). They were cases where no surgical lesion could be discovered at operation in spite of the fact that the symptoms, as far as they could be analyzed, led definitely to a diagnosis of some grave surgical trouble within the abdomen.

The diagnosis in most of the cases was speculative by necessity, especially where the patients were unable to give any intelligent history or description of their symptoms. In some of them, operation, to be of benefit, on the basis of a correct diagnosis, was demanded at once, before the meager history and the unsatisfactory examination could be deliberately analyzed.

The first case, that of a young married woman, led to a diagnosis of septic peritonitis. Under ether several quarts of highly colored urine, showing a thick ring of albumin, was withdrawn. A median incision showed some old adhesions about the pelvis, but nothing abnormal elsewhere. The abdomen was filled with salt solution and closed, the patient living only a few hours. It was gleaned from the husband after operation that some oil had been used to produce abortion. The distended bladder was recognized before section, but in the general picture made by the facies, the abdominal tenderness, the constipation, and the vomiting, it played an unimportant rôle. The jaundice of a second patient rapidly faded, the diarrhea lessened, and the vomiting ceased after the laparotomy. Finally she got well. Munro heard indirectly afterward that the patient had been treated in the medical out-patient department of the hospital for cirrhosis.

The third case was that of a widow fifty-three years old. The general condition was bad, and after consultation operation was advised on the chance that there might be some acute inflammatory process going on within the abdomen. A small incision showed the tumor to be the swollen right hepatic lobe. The gall-bladder was moderately swollen and tense, but without signs of peritonitis or stones. After examination the abdomen was closed. The patient died after eighteen days.

The fourth case was that of a trained nurse thirty years old. There had been previously a history of gastritis. On the sixteenth day of the last attack the patient had chills, vomiting, pain in the right iliac region, general abdominal tenderness, and a temperature of 104°, with a rapid, intermittent pulse. Blood count showed a leucocytosis of 18,800. Palpation showed a slight tenderness of the abdomen generally, with marked tenderness in the right hypochondrium, and fulness, with an apparent tumor in the region of the right kidney; the tenderness over the appendix was less marked. Under ether the spasm of the right rectus persisted in the hypochondriac region, but nothing abnormal could be felt over the appendix. A short opening was made, but nothing abnormal could be found in the liver, ducts, pancreas, stomach, intestines, or in the appendix. About the falciform ligament there were a few adhesions, and one edge of the omentum felt thickened with a few recent adhesions. The upper border of the right kidney seemed obscure and fuller than normal, but not indurated. There was no excess of peritoneal fluid. As no further interference appeared to be called for, the abdomen was closed. The patient recovered.

Under the belief that there was a possible pancreatic or other acute intra-abdominal inflammation, an exploratory incision was made in an old Irishwoman. The head of

the pancreas seemed swollen and indurated, and a portion was removed for examination. Nothing else was found abnormal. The patient lived only a few minutes. In default of more accurate data, the patient's symptoms were probably due to alcoholism.

The sixth case was somewhat similar to the last, but with morphine as an additional factor. Convalescence was satisfactory.

The laparotomy relieved the symptoms in the case of an abnormally fat man of forty-six, but later the dull pain in the left loin, at times sharp and aggravated by motion or jarring, returned. Nothing was found during the operation except an excessive quantity of fat in the omentum (which was undoubtedly the tumor felt from the outside) and in the mesentery. His father and sister were abnormally fat, and this should have given the clue to a proper diagnosis. The patient also suffered more or less from oxaluria.

The supposed tumor in a woman of forty-eight, who had been injured by being dragged over the dashboard of a wagon and kicked by a stumbling horse, proved to be the pancreas spread out over a rheumatoid spine projecting forward. For twenty months there had been daily vomiting, the vomitus always being yellow, bitter, never containing food, coming at any time of the day. She never vomited at night. The abdomen was closed, the patient recovered quickly from the operation, and the fulness and vomiting disappeared never to return.

MANAGEMENT OF THE ANESTHETIC IN OPERATIONS ON THE RESPIRATORY TRACT.

In operations about the nose and mouth the management of the anesthetic has always been unsatisfactory, says MOSHER *(Boston Medical and Surgical Journal,* Jan. 23, 1902), the reason being that in using a cone or an inhaler, the etherizing and the operation cannot be carried on together.

Mosher believes that the apparatus of Fillebrown and Rogers obviates this difficulty, nor is this apparatus untried, it having been used in cleft palate operations for the last three or four years.

The etherizing is accomplished by playing a stream of ether vapor over the patient's mouth. A water-bath keeps the ether from freezing in the bottle in which it is vaporized, and the ether is forced through the tube and into the patient's mouth by a bellows. A valve in the stopper of the ether bottle gives the etherizer a simple method of administering any strength of ether and air desired. A shielded alcohol lamp keeps the bath warm.

It has been abundantly proved that chloroform is dangerous in adenoid cases or in cases where much mucus is developed. Less vomiting follows if gas is used to start with, and the patient does not seem to get so saturated with ether afterwards, and comes out sooner.

In the matter of position, the point to be aimed at is to get the light on the part which is being worked upon. The upright position accomplishes this best. There is less bleeding. The head can be bent back and turned to the side so as to show either tonsil, as required. If the head is regularly tipped forward the blood will run out of the nose and the mouth instead of down into the throat.

As to holding the patient, the arm of the nurse should lie in the bend of the child's hips. If the patient is anything more than a baby, a nurse can be dispensed with for holding; the assistant puts his left leg in the chair back of the patient, grasps the patient's hair and holds the head against his knee.

In all the more extensive operations it is well to have the etherizer free to confine himself to the ether alone.

Mosher remarks that those who give atropine as a routine measure before operating to prevent the formation of mucus would seem justified in this, from the fact that atropine has prevented death in the case of animals subjected to rough manipulation in the pharynx or upper larynx.

VOLKMANN'S CONTRACTURE.

The definition of Volkmann's contracture is given by DUDGEON *(Lancet,* Jan. 11, 1902) as a contraction of the fingers and sometimes of the wrist, which comes on rapidly with loss of power which is not absolute in the forearm muscles after a severe injury, usually in the region of the elbow-joint, generally in young children. The deformity is due to changes in the flexor muscles without injury to the peripheral nerves, caused in many cases by tight bandaging and the pressure of splints. Anderson summarizes the etiology thus: "It is a result of prolonged

fixation of forearm fractures by any form of apparatus that intercepts the free circulation of blood through the muscles and nerves of the part."

The symptoms come on rapidly, as Volkmann describes, "in half a day or less in very severe cases." The great feature in the history of a case of this deformity is the onset of paralysis of a limb with contracture; this is most important and characteristic. The fingers sometimes go blackish in color and frequently swell. There is rarely any pain; the absence of this symptom may be the cause of the splints not being loosened more rapidly; but on removal of the splints the forearm is often tender and sometimes extremely so. There is often sloughing of the skin, usually in the middle or upper part of the flexor surface of the forearm. The fingers are at first simply flexed, but soon pass into the position so characteristic of this deformity. With the wrist extended the metacarpophalangeal joints are extended also; the interphalangeal joints of the fingers and the terminal joint of the thumb are, however, strongly flexed, so that the tips of the fingers touch the lower part of the palm, and no reasonable amount of force seems capable of straightening them. As soon as the wrist-joint is flexed to a right angle, then the interphalangeal joints can be easily extended. In very bad cases the wrist becomes strongly flexed and is incapable of extension. The hand is pronated and the forearm is generally semiflexed. The flexor muscles of the forearm seem hard, firm, and much wasted. A thickening is sometimes felt in the soft tissues, usually in relation to the pressure sore which is so frequently present. A swelling, bony in character, is sometimes to be found at the lower end of the humerus, generally at the inner side. Sensation may be normal, or there may be partial or complete anesthesia; this is dependent on the condition of the peripheral nerves. There are thus to be seen usually three grades of this deformity: (1) partial contraction of the fingers; (2) the hand in the typical position; and (3) strong flexion of the wrist and fingers, without any power of extension.

There are no true trophic lesions in pure ischemic myositis, but the hands are frequently cold and blue and the skin smooth. The fingers frequently swell when the arm hangs down by the side for some time. In well-marked cases there is as much shortening of the bones as is met with in acute anterior poliomyelitis, etc. Turney's explanation is: "The growth of bones proceeds only *pari passu* with the amount of support it has to give to its attached muscles."

The following is a list of nerve lesions which are given as offering points of diagnosis: (1) Ulnar, median, or muscular spiral paralysis; (2) the contraction after acute anterior poliomyelitis; (3) Little's disease; and (4) functional disease.

As to prognosis, Volkmann makes this statement: "The prognosis is bad, especially in cases where the hand and fingers are affected; here it is practically hopeless. It is better in the lower limbs, for here tenotomy may be practiced; slighter cases may be improved with massage." About ten years after Volkmann's paper, Anderson said: "The lesion—*i. e.*, ischemic myositis—is seldom of a permanent character, and the function may generally be restored by systematic active and passive movements with massage, and, if necessary, the galvanic current." Dudgeon's experience corroborates in the main Anderson's assertion.

In a severe injury to the bones of the forearm and lower end of the humerus anterior and posterior splints should not be applied, or at any rate not in these cases when there is much swelling. When the contracture has occurred and is of recent origin, Volkmann recommends the extension of the muscles under an anesthetic. This treatment alone has proved to be valueless, and the extension of the muscles is no easy matter; the contracture still continues till it reaches a maximum even under extension. There seem to be two methods of treatment, medical and surgical. The former consists of massage to the forearm twice daily for ten minutes or more (as long as there is no pain), and passive movements of the fingers. This treatment must be carried on without any long interim for about two years to have complete results.

As to surgical treatment and the time of operation, as many of the cases slowly continue to contract for some time after the accident it seems possible that it would be better to delay operation for three or four months. The different operations which have been performed are numerous. Davies-Colley cut through the flexor muscles of the forearm themselves, and at a second operation, a month after, cut through all the flexor tendons. The deformity is cer-

tainly cured by such treatment, but no hope of flexion of the fingers can ever be entertained. Johnson excised a short piece of bone from the middle of the shaft of the radius and ulna. The effect on the contracted wrist and fingers was satisfactory, but the divided bones only united by fibrous tissue, and the child had to wear a leather splint. Tendon lengthening, first advised in these cases by Page, simply consists in splitting longitudinally the flexor tendons of the fingers or cutting them in a Z-shaped fashion; then, when full extension has been applied, suturing the lengthened ends. The after-treatment consists of keeping the hand and fingers on a splint for about a fortnight, then gradually applying massage, the galvanic current, and finally active and passive movements of the fingers, hand, and forearm. Lastly, in cases where the presence of a lump situated at the lower end of the humerus after an injury to the bone interferes with flexion and extension of the forearm, this bony mass can be excised.

ABDOMINAL AORTA LIGATION FOR ANEURISM.

The fourteenth case in which the abdominal aorta has been ligated and the operation recorded is that reported by MORRIS (*Annals of Surgery*, February, 1902), who believes that the operation may be successfully accomplished in the near future.

Examination of the abdomen of a colored woman of twenty-four disclosed an epigastric tumor pulsating so forcibly that the beats were visible at a considerable distance from the patient, and the objective signs of aneurism of the aorta were typical of that condition.

For purposes of ligation, Morris chose a soft-rubber catheter about 12 millimeters in circumference, to avoid injury to the tunica intima. The aorta having been isolated from surrounding structures for a short distance, the catheter was carried around it with the aid of an aneurism needle threaded with a loop of silk. The loop of catheter surrounding the aorta was then drawn tightly until circulation in the femoral arteries ceased, and a long clamp forceps held the catheter in place. This avoided tying. The ends of the catheter and of the forceps were allowed to protrude from the abdominal wound, which was sutured, with the exception of room for the ligating apparatus. The ligature was applied at a point about two inches below the aneurism and one and a half inches above the bifurcation of the aorta.

The operation may be done in about fifteen minutes by a person fairly skilful.

Nineteen hours after operation the patient could feel the prick of a pin over the vastus muscles, but the legs showed general loss of sensation. In twenty-two hours from the operation, the heaving, expansile pulsation of the aneurism suddenly began to diminish. In about three hours it had apparently disappeared.

The ligature was removed twenty-seven hours after being first applied. Sensation was restored and sphincter control regained. There was every hope of recovery, but on the following night she began to develop evidences of intense septicemia. She died fifty-three hours after the operation.

PUERPERAL SEPSIS AND ITS DIFFERENT FORMS TREATED BY OPERATION.

As examples of what can be done in the operative treatment of puerperal sepsis, HIRST (*Philadelphia Medical Journal*, Jan. 18, 1902) describes some cases under his care in the period from October to July, 1901.

Two operations were performed for the ovarian cyst and fibroid tumor within six days of labor. A woman with an ovarian tumor was profoundly septic; delirious, with a rapid pulse. The tumor was black in color and necrotic from the twists in its pedicle. Its removal was followed by prompt recovery. A patient with a fibroid tumor had been infected by the manual extraction of the placenta. Her temperature was 104°, her pulse 140. She had septic pneumonia, and phlebitis of both legs, but she recovered from the hysterectomy, which removed the primary source of infection in tumor and uterus.

Two cases of necrosis of the fundus and the cornu of the uterus associated with salpingitis were particularly interesting. One was operated on four, the other six. weeks after labor. The whole infected area was removed by salpingectomy and by exsection of the diseased portion of the uterus. A wedge-shaped piece was removed from the latter, the wound being united by interrupted catgut (formalin) sutures. Both of these women recovered, and possess one

normal tube, an ovary, and a uterus capable of further child-bearing. In one woman there was an embarrassing complication of a fecal abscess in Douglas's pouch, and a large perforation of the lower portion of the sigmoid flexure of the colon. The mistake was made of putting stitches in the necrotic bowel to close the opening. They did not hold, and the patient had for a time a fecal fistula. In another non-puerperal case at the same time with an enormous abdominal abscess and a large perforation of the lower bowel, the whole pelvis was packed with gauze and drained with a glass tube. No attempt was made to close the jagged hole in the bowel surrounded by necrotic tissue. The gauze was removed at the end of forty-eight hours, the glass tube replaced by a rubber one, and the pelvis irrigated daily. Within two weeks the fecal fistula closed and has remained healed.

A pelvic peritonitis following a labor, and only manifesting serious symptoms in a subsequent pregnancy, nine months later, is an interesting example of the late manifestations, subsequent complications, and recrudescence of puerperal sepsis. The woman was admitted to the hospital in a bad condition. She gave the history of a sharp attack of pelvic peritonitis following her last labor, from which she had apparently made a good recovery. She had fever and pelvic pain that quite incapacitated her. There had been an amenorrhea for more than two months. She was found to be pregnant, the uterus and appendages firmly fixed in a retrodisplacement. The abdomen was opened, the adhesions freed, and the uterus replaced. The woman was symptomatically relieved and pregnancy continued.

In a case of pelvic cellulitis the patient, a young primipara, had been delivered by a difficult forceps operation. The cervix, vaginal vaults, and vaginal walls were badly torn. Symptoms of sepsis soon appeared, steadily but slowly becoming worse, until some six weeks after labor there was extreme emaciation, exhaustion, delirium, and every manifestation of profound septic intoxication. The physical examination was unsatisfactory. All that could be felt was the firm exudate in the pelvic connective tissue indicating cellulitis. No focus of suppuration could be made out. As it was evident that the patient would die if not relieved, an exploratory section was determined upon, with the idea that if the intra-abdominal organs were not affected the abdomen should be closed and multiple incisions should be made in the vaginal vaults. As soon as the fascia was cut and the rectus muscle separated, pus gushed out of the space beneath the anterior reduplication of the peritoneum. The abscess cavity was washed out, a counter-opening was made in the anterior vaginal vault, and a drainage tube was passed through by which the abscess was irrigated. A vesical fistula developed but closed spontaneously, and the patient made a perfect though a slow recovery.

In two cases of abscess in Douglas's pouch, both followed a premature interruption of pregnancy; one at five months, the other earlier, and the result no doubt of a criminal abortion, for the posterior wall of the uterus was perforated and pus flowed out of the cervix. There were the usual symptoms of pelvic abscess, a large mass in Douglas's pouch, fever, and profound septic intoxication. A transverse incision was made in the posterior vaginal vault, a large quantity of pus evacuated, the pelvic organs explored by a forefinger passed into the pelvis, and the abscess cavity drained by a T-shaped rubber drainage tube for two weeks. The cavity was flushed out daily through the tube, a form of drainage much more efficient and much less painful to the patient than gauze packing. Both patients made a rapid and complete recovery.

THE TREATMENT OF HIGH RECTAL CARCINOMATA.

WIESINGER (*Deutsche Zeitschrift für Chirurgie,* November, 1901) states that all cases of carcinoma situated near the anus, as well as uncomplicated cases located more deeply in the rectum, can be operated upon successfully through an incision involving only the soft parts. For the more serious cases high up in the rectum, a resection of the coccyx and a portion of the sacrum offers the most favorable route for the excision of the growth, but this operation should always be preceded by the formation of a permanent artificial anus in the left iliac region. For this purpose an incision is made into the peritoneal cavity along the outer border of the left rectus, and a second incision into the muscles at the outer side of the left anterior superior iliac spine, and

then an intramuscular tunnel is formed between these two incisions. A loop of the descending colon is drawn out of the first incision, passed through the muscular tunnel, and sutured to the cutaneous margin of the second incision. When the colon is opened, the patient has an artificial anus that can be controlled by muscular action. By carrying out the above procedure, all fecal accumulations can be removed, and the catarrhal condition of the rectum can be relieved before the radical operation is undertaken. In addition, an opportunity is obtained for producing a more nearly aseptic condition of the operative region by flushing out the rectum with antiseptic solutions.

The cleansing of the rectum is followed by a diminution of the inflammatory exudate, and in some instances tumors which appeared inoperable become movable and favorable cases for operation. The general condition of the patient is also improved.

The production of an artificial anus reduces to a minimum the danger of septic wound infection and peritonitis, which otherwise cause death in over fifty per cent of the fatal cases after operation. The after-treatment is also greatly simplified when the fecal current is diverted from the site of the operation. The wound is less apt to become broken down and gangrenous, and the patient avoids the necessity for prolonged treatment in the continuous bath.

During the operation on high rectal carcinomata by the sacral route, the peritoneal cavity has to be opened, but it should be closed again before the affected gut is opened or removed. All enlarged glands in the mesocolon should be excised, and at times this may necessitate the resection of the gut at a higher level than would otherwise be necessary. The best results are obtained by making no attempt to restore the continuity of the rectum. The anus should be removed along with the rectum, and the remaining end of the gut should be sutured in the upper angle of the wound.

It is advisable to retain the artificial anus, when it has been formed as previously described, even after complete healing of the wound. By so doing the shock of another operation is avoided, and the patient escapes the distress arising from fecal fistula, neuralgia, stenosis, and other postoperative complications. In addition a recurrence of the growth can be attacked with greater facility.

Eleven cases of high rectal carcinomata have been operated upon in the above manner with only two deaths. One of the patients died from exhaustion six weeks after the operation, and the other patient, who had pulmonary emphysema before operation, died of bronchitis on the third day. One patient, who had a recurrence within nine months, was operated upon a second time, and is still alive eighteen months after the operation. Two other patients had a return of the tumor at the end of two and three years respectively, and have been operated upon again during the past month. Four patients have lived from one to four and a half years since their operations, and are still free from recurrence. The two remaining cases show no signs of a recurrence, but their operations have been more recent.

RADICAL CURE OF HYDROCELE.

On the subject of the radical cure of hydrocele COLEY and SATTERWHITE *(New York Medical Journal,* March 29, 1902) note that at the Hospital for Ruptured and Crippled, New York, during the ten years 1891 to 1900, there were treated 2214 cases of hydrocele. Of these, 103 were hydrocele of the canal of Nuck or hydrocele in the female; 1603 cases in children under the age of fourteen; 101 in males between the ages of fourteen and twenty-one years; and 613 cases in males over twenty-one years of age.

That nearly all of the patients with hydrocele in infancy and early childhood are cured either by the application of some simple thing like iodine or disappear spontaneously is shown by the fact that while 1603 under the age of fourteen were observed, only 101 were seen between the ages of fourteen and twenty-one, and very few of these gave a history of hydrocele in infancy.

The radical treatment of hydrocele should, then, properly concern itself with the consideration of the cases occurring after the age of fourteen years.

The routine method of treatment in infants and young children consists in simple daily applications of equal parts of tincture of iodine and tincture of belladonna. Long experience with this method shows that it has some effect in hastening the absorption of the fluid, although doubtless spontaneous cure would result without any application. Occasionally, when the hydrocele is very

large, the fluid is aspirated and the tunica irritated by the point of the trocar. This, however, is not done more than three or four times in the course of a year. Hydrocele in the adult, however, is a condition that requires more serious consideration. About a year ago, influenced by the fear of a private patient that even ten minims of carbolic acid might possibly cause trouble, it was determined to treat all adult cases that came to the clinic, without selection, with injections of two or three minims of carbolic acid, believing that it would probably be necessary to repeat the injections several times before effecting a cure. The result is sufficient, probably, to show that practically just as curative effects may be obtained by using two minims of carbolic acid instead of from thirty to ninety. This small amount is believed to be absolutely free from all risk, and if a cure of large and long standing hydroceles may be obtained by this simple procedure, it is not justifiable to perform an operation which would confine the patient to his home or the hospital for a period of ten days, at least not until the simple method has been tried first.

The solution of carbolic acid should be sufficiently concentrated. The instrument used is very simple, and consists of a double trocar and cannula, the inner trocar closely fitting and projecting slightly beyond the outer and bearing a thread at its proximal end, so that it can be attached to any ordinary hypodermic syringe. The inner cannula, being attached to the syringe, is first filled with the liquefied carbolic acid, and by means of the gauge upon the piston or barrel of the syringe, two or three minims can be used with absolute accuracy. After the hydrocele fluid has been withdrawn—and here must be noted the importance of so compressing and manipulating the folds of the tunica vaginalis as to empty the sac as completely as possible—the smaller trocar is introduced into the larger and the injection made. Both trocars are then withdrawn together, the scrotum is thoroughly manipulated in order that the carbolic acid, slightly diluted by a few drops of hydrocele fluid that must always remain, comes in contact with the entire serous surface.

The objection has been made that it is impossible, with such a small amount, to come in contact with more than a limited area of the tunica vaginalis, and hence a cure would be improbable.

The only practical answer to this objection is that careful examination of the cases in which this method has been employed has shown a uniform inflammatory thickening of the whole tunica, which was in some cases more than a quarter of an inch thick. The withdrawal of an ounce and a half of thick bloody fluid a week after the injection, in the case described, certainly proves that a marked inflammatory reaction took place, quite sufficient, one would judge, as a complete cure of the hydrocele resulted.

After a careful review of the methods at present employed in the treatment of hydrocele, Coley and Satterwhite are convinced that the carbolic-acid method of Levis is by far the best. It is easily performed and almost uniformly successful, the only disadvantage being the doubt as to its always being free from risk. While this risk may not be great, a few serious results have followed the introduction of these comparatively large amounts of carbolic acid into the tunica vaginalis, and this risk, slight as it may be, is sufficient to deter many patients, in private practice at least, from having it tried.

While they believe that by the injection method described the great majority of cases of hydrocele may be cured, the authors also believe that there will always be a certain small number of cases in which the open method of resection should be employed. Of all the open methods as yet devised, too, that of von Bergmann, resection of the superficial tunica vaginalis, seems the best and the most surgical, and it should never require more than eight or ten minutes in its performance.

THE TREATMENT OF ARTERIAL INJURIES COMPLICATING DISLOCATIONS OF THE SHOULDER-JOINT.

KÖRTE (*Archiv für Klin. Chirurgie*, Bd. 66) reports a case in which an extravasation of blood developed in the axilla immediately after the reduction of a recent dislocation of the shoulder. The extravasation progressively increased and distended the whole axilla and the adjacent side of the chest. The arm became swollen and livid, and the radial pulse was feeble. Complete paralysis of motion and sensation of the arm and hand gradually took place.

On account of threatened gangrene of the

skin, the axilla was opened thirty hours after the injury by an incision through the pectoral muscles. It was found that the hemorrhage resulted from an avulsion of one of the large branches of the brachial artery, leaving a ragged opening about six millimeters in diameter. The proximal and distal circulation of the brachial was controlled by rubber-covered clamps, and the wound closed with two layers of fine interrupted sutures. The radial pulse remained of the same strength as before operation. The superficial tissues could not be brought together over the artery in such manner as to form a support for the line of suture. Iodoform drainage was introduced, and a portion of the skin wound closed.

An iodoform eczema developed after operation, and, beginning with the seventeenth day, the patient had erysipelas for three days. On the twenty-first day after operation the brachial had to be ligated above and below the site of the original wound because of a severe secondary hemorrhage. The line of sutures probably failed to hold because of the lacerated condition of the wound, the atheromatous rigidity of the artery, and the absence of any support from superimposed tissues. Gangrene developed in the forearm, but subsided after multiple incisions. Suppuration took place in the shoulder-joint, and the head of the humerus had to be excised later. The arm was finally saved, but the patient still has a paralysis of the forearm and hand. Although ligation finally became necessary in this case, yet the ultimate results would undoubtedly have been less satisfactory if the brachial had been ligated at the first operation. By a primary suture of the arterial wound the nutrition of the arm was less interfered with, and the tissues about the axilla and shoulder were placed in a more favorable condition for the development of a collateral circulation before the ligature was applied.

A distinction is to be made in the treatment of the various forms of injuries of the brachial artery arising from dislocations and efforts at their reduction. The cases in which a slowly forming aneurism results from slight trauma of the vessel can be treated expectantly, for spontaneous healing sometimes occurs. This result may be encouraged by compression of the subclavian. Even though healing does not take place, the delay has given time for a collateral circulation to form, and there will be less danger of gangrene following a later operation for the cure of the aneurism. If the pulsation in the tumor can be controlled by digital compression, this vessel should be ligated; otherwise the ligature must be passed around the brachial at the site of the lesion in order to perfect a cure.

Operation is demanded at a much earlier period in cases where a hematoma rapidly forms after a complete perforation of the walls of the brachial artery. Delay in these cases subjects the patient to the dangers of gangrene with a rupture of the hematoma, and also to the development of a paralysis of the brachial plexus which will interfere with the use of the limb long after the arterial wound has healed. Ligation of the subclavian artery is contraindicated in these cases because the extravasation of blood in the axilla interferes with the nutrition of the arm, and impedes the formation of a collateral circulation. On the other hand, if sufficient blood did find its way around the aneurism to prevent gangrene, there would still be danger of hemorrhage from the injured artery. It is therefore a better plan to open up the axilla at once, turn out the clots, and seek the point of rupture. When found it should be sutured, unless the wound is too extensive and lacerated or the vessel walls too atheromatous to permit of this procedure. In the latter instance the artery should be ligated above and below the site of the rupture.

DEVIATION OF THE NASAL SEPTUM.

Treatment of deviation of the nasal septum is necessarily surgical. In some cases where there is thickening of the septum, the knife or saw will correct the trouble by removing the thickened portion, but in cases where there is a marked deviation, FORSYTH (*Buffalo Medical Journal*, April, 1902) believes Asch's operation to be the best. In this operation he has used cocaine; and, in the last one, adrenalin to prevent hemorrhage.

Preliminary operations are sometimes required in cases in which there is a luxation of the triangular cartilage from the columna. Polypi in the concavity should be removed, and if they exist on the other side they are probably behind the deviation, and cannot be reached until the deformity is corrected. The middle turbinated bone

may be hypertrophied so as to interfere with the patency of the wider nasal fossæ after the septum has been brought back to a vertical plane, or it may interfere with the surgeon's efforts to push the septum back into the vertical position; such cases demand the preliminary removal, either partial or total, of the turbinated bone.

Asch's operation consists in making a crucial incision through the cartilaginous septum, breaking down by the fingers or forceps the bases of the segments thus formed, and the insertion of a hollow splint.

Asch says perforation following the operation is so rare as not to be considered as a probable sequence, and the few cases he has seen were due to cachexia and to unskilful performance of the operation.

TECHNIQUE OF X-RAY THERAPY.

A thorough understanding of the fundamental principles of radiotherapy, extreme caution in all manipulations, and careful experimentation on animals, is recommended by KIENBOECK *(Interstate Medical Journal,* February, 1902) for those that have occasion to use the *x*-rays in their practice.

The physician should use a medium soft tube, placed just above the part to be treated, and at a distance of from 15 to 20 centimeters. The portion of the skin not to be treated should be protected by a sheet of lead, 0.5 millimeter thick, under which should be placed a strip of flannel to protect the skin from flying sparks. Tubes of high intensity should be employed, with rapid interruptions, the time being varied at each sitting according to the judgment of the operator.

The tube used must be capable of producing a good picture of the thorax of a medium-sized man, when viewed through the fluoroscope 60 centimeters from the focus. With an interrupter giving interruptions at the rate of twenty to thirty a second, a good skiagram should be obtained with an exposure of thirty seconds. Although a five minutes' exposure will produce a slight effect, a radiance lasting twenty minutes may be regarded as "normal exposure." The effect of normal exposure will be about as follows: On normal skin, after a period of latency of fourteen days, the hair will fall out, accompanied by an erythema lasting a few days; on skin affected with sycosis the loss of hair will occur as early as the eighth day, accompanied by the formation of numerous pustules; lupus tissue will become exfoliated after a lapse of a week.

The effect of normal exposure of twenty minutes may be produced by dividing the action of the radiance over several sittings of shorter duration.

If there be taken into consideration the intensity of the radiance, the number of séances, and the length of intermissions, there may be formulated these methods of *x*-ray therapy:

Daily sittings, with the radiance of slight intensity, lasting five minutes, continued until the first symptoms of reaction appear.

Sittings, with a radiance of medium intensity, twice a week until reaction begins to be manifest (about two weeks); or three or four sittings, with a radiance of medium intensity, given on alternate days.

The "normal exposure" in a single sitting, and await reaction.

USE OF HEAT AND THE RETAINED INJECTION IN CONFINEMENT.

To obtain the soothing and relaxing effects of hot water upon the rigid os, the vagina, and the perineum, and also the soothing effect of heat on the lumbar muscles, without affecting the normal secretion of the vaginal glands, GALLOWAY *(American Practitioner and News,* Jan. 1, 1902) has devised an improved obstetrical rubber bedpan.

When true labor is begun and the os dilated the size of a dime or quarter of a dollar, a quart of hot water is put into a water-pad, the water valve is closed, and the pad blown quite full of air. The rim of the pan is inflated with air, the pan rinsed with hot water, dried, and put under the patient. The air of the water-pad is then let out through the air-valve until the patient indicates that the support to her back is perfectly comfortable. From the time the heat in the water-pad begins to be felt, the back pains and the nervous phenomena from this cause, familiar to all physicians, are so greatly relieved as to practically change the vexing character of this part of labor. The hot-water pad is helpful as a body rest, a back support, and a means for soothing applications of heat to the lumbar plexus of nerves.

With the dilatation of the os above noted, a series of four or five hot-water injections is begun. The douche is carried up into Douglas's cul-de-sac, and the vulva closed around it with the thumb and first finger of the hand not occupied with the attached syringe. One pint or more of hot water, bearable to the hand, is gently pumped into the closed vagina, and is retained from the completion of one pain until gently expelled by the bearing down of the next. After the third or fourth injection the os is relaxing, and during pains it may be readily expanded by carrying two fingers with an upward pressure around its upper edge.

After completion of the first series of injections a rest of ten minutes may be taken, then a second series of the same number of retained injections should follow. With each pain, when fully on, the os can readily be dilated. Upon completion of this series the os can soon be slipped over the occiput, or sufficiently enlarged to admit the easy application of forceps if desired. Following the second series of retained injections, the vaginal tract becomes thoroughly lubricated through stimulation of the vaginal glands. This use of heat relaxes to their full extent the os, the vaginal walls, and perineal muscles, and gives an opportunity to the physician to assist his patient and enormously shorten her time of labor. Consequent saving of her strength and nervous force is followed by rapid convalescence. If the physician does not wish to assist in dilating the os, labor is still greatly relieved by the anesthetic and relaxing effect of the retained injection and by comfort of the hot-water pad to the back.

In these injections the hand determines the degree of heat. Water, not too hot for the hand, should be used for the injection. The patient will frequently request that some of the hot water be left in the pan because of its comfort to her hips. The pan is emptied of the hot water as often as necessary by reversing the syringe and pumping out into a convenient vessel, or by removing it in the ordinary way. Boiling water can at any time be pumped through the syringe to render it aseptic. When full dilatation of the os has taken place, hot water retained injections are discontinued; an inflation bag made from the highest grade of Para rubber, after aseptic preparation, is then slipped over the douche and made fast at the end by a slip-ring; with this at his side the physician has an immediate tampon for postpartum hemorrhage. A free slip-ring is placed equidistant from each end of the bag, the bag dampened in water, passed upward into the uterus and inflated with air first, then cold or hot water sprayed into it if desired.

TREATMENT OF CATARRH.

Nowhere has surgical procedure so completely taken the place of drugs as in the treatment of diseases of the upper respiratory tract, but some of the methods of treatment discarded at the adoption of surgical procedure and the discovery of cocaine have, says DOUGLASS *(Post-Graduate,* March, 1902), been restored to an honored place in the pharmacopœia of rhinology.

In spite of the fact that the use of irrigation of the nose is attended with dangers, irrigation is important to remove secretion and bacteria, and to properly cleanse the organ. The temperature of the solution should be 102° or 106° F. There should be a proper specific gravity; a teaspoonful of salt to the quart of water is about the correct amount. As to the force and direction of the current, if the irrigation is used in an upward direction, so that the irrigating fluid impinges against the middle turbinate body and outer nasal wall, it is more likely to enter the frontal sinus than if directed backward parallel with the floor of the nose. The injections should be made with little force. An excellent way of irrigating the nostril, especially in children, is by means of a soft catheter, No. 6-12, attached to an ordinary piston syringe. The catheter is lubricated and gently introduced into the nostril until the nasopharynx is reached; it is then drawn forward one-half an inch, the head is tipped well forward, and then the patient breathes through his mouth. Irrigation is then performed under low pressure of the piston. A specially devised douche bag has also been used to irrigate the nasal organ; it consists of an ordinary rubber ball holding six ounces, with a curved tube leading from the bulb. This should be half an inch in caliber; the tube terminates in a hard rubber end made to accurately fit the nose. With a bulb of this size it is possible to allow a large stream of irrigating solution to enter the nose under very low pressure. The patient's head

should be well bent forward upon the chest, the mouth should be opened, and if necessary the breath should be held during the irrigation, or respiration should take place through the mouth. It is imperative, also, that the obstructed nostril must be the one that is irrigated, so that blocking may not occur.

It is important to wash the nose and nasopharynx while the patient is unconscious from the anesthetic before the operation is begun. This is done by removing the ether cone and rolling the patient to the edge of the couch or table. He rests on one shoulder and breast, the face toward the floor. An ordinary piston syringe can thus be used and the nares irrigated, after which the patient is returned to the original position. This procedure has brought about less reaction and inflammation attendant upon operations.

The douche, when properly used, is indispensable in nasal operations. It relieves congestion, and is valuable in acute and chronic conditions. It facilitates the absorption of exudate poured into the lymphatic and interstitial spaces, and of serous exudate in cases where there is a tendency to polyp formation. The flow of water through the nose also acts by suction upon the accessory sinuses, aiding drainage, especially of the frontal sinus and ethmoid cells. When the water is used quite hot it has a hemostatic action, and is useful to check small hemorrhages.

A pure stick of silver nitrate has a powerful effect as a cauterizant, and there are conditions where its use is justifiable. Nitrate of silver fused upon a probe will quickly relieve catarrhal discharge dependent upon granulations. The solid stick may also be used in cases of atrophic rhinitis where ulcerations are present at the bases of the scabs. It is applied after removal of the scabs. It is also of great value in exuberant granulations after operations. Under the silver treatment of the throat, Douglass has seen cases of tubercular laryngitis get well in a few weeks, the discharge ceasing and the ulcers healing in the kindest way. Solutions of silver, 20 to 30 grains to the ounce, are sometimes useful, in cases of atrophic rhinitis, and occasionally in acute rhinitis. As to the weaker solutions, one to five grains is found sufficient for a sensitive membrane. This solution is useful in acute or chronic rhinitis where it is desired to modify or correct the discharge, make it less abundant, and finally to check it.

Solutions of sulphate of zinc, five grains to the ounce, and of zinc chloride, two grains to the ounce, are valuable in discharges from the accessory sinuses. Best results are probably obtained in frontal sinus or antrum cases.

Iron alum, ferri et aluminii sulphas, in solution, 20 to 30 grains to the ounce, may be used in pharyngeal and laryngeal conditions where chronic inflammatory changes have resulted in slight hypertrophy of the membrane. This solution is also of value in cases of singers' nodules on the edges and upper surfaces of the vocal cords.

Alumnol, a naphthol alum, 20 grains to the ounce solution, should be used in the larynx in case of relaxed mucous membrane where there is no hypertrophy of the folds.

Ichthyol in its effects is stimulating, antiseptic, alterative, antiphlogistic, and corrective. Solutions of 20 grains to the ounce first cause hyperemia, which increases with the strength of the solution. Concentrated solutions produce almost acute coryzal discharge with irritation, which will last nearly twenty-four hours. The most brilliant results are seen in the forms of atrophic or dry catarrh; it destroys the germs present in the nose, heals the minute ulcers, causes cicatrices to form, thereby lessening the tendency of scabs to adhere. It should be used in watery solutions, 10, 20, 40, 60 grains to the ounce, with a spray. In atrophic cases glycerin solutions may be used, as the action of the glycerin is also desired. Ichthyol is best mixed with vaselin, not lanolin, 40 grains to the ounce, with five grains of menthol to lessen the odor. In the larynx ichthyol has not been so satisfactory as in the nose.

Cocaine muriate checks secretion for a long time, and when used fairly often keeps a morbid secretion under control. It is useful before making medicinal applications, allowing the applications to reach all desired parts, and preventing its being washed away too soon by secretion. It may be used whenever acute congestion produces so much swelling that application and examination are interfered with. The peculiar sensation of a lump in the throat produced by cocaine in the larynx makes it undesirable to use in pharyngitis or laryngitis.

Suprarenal preparations are valuable in

the treatment of acute catarrhal conditions, and in some cases of chronic rhinitis with marked discharge. Douglass believes it possible with suprarenal preparations persistently applied to alter a hypertrophic tendency and to bring about the opposite condition of atrophy. In some cases of hay-fever it is of value.

Oily sprays penetrate every fold of the mucous membrane and possibly sometimes reach the ramifications of the bronchi. When an absolutely non-irritant, bland preparation is desired, liquid albolene or liquid vaselin should be used. Effective combinations may also be made by adding other remedies. The favorite drugs readily soluble in benzoinol are menthol, eucalyptol, oil of cubebs, oil of pine needles, resorcin, chloroform, turpentine, oil of rose, sassafras, and all the aromatic essential oils. Menthol should be used in the strength of 2 to 5 grains to the ounce, eucalyptol 1 to 8; chloroform, 5 to 20 minims; resorcin, 10 to 15 grains; and most of the essential oils should be used one or two grains to the ounce.

Harris combines with almost all treatment of the nose and throat some form of alkali, and many cases are helped by some form of the alteratives, as a combination of iodine in very small doses, with phosphorus or bromine 1-100 of a grain in sherry. In children it is better to combine some form of iodine with iron, as the syrup of iodide of iron or some form of cod-liver oil; for the irritated mucous membrane of the throat, or a hypertrophy of the lingual tonsil, some preparation of codeine; latterly, however, codeine is being displaced by heroin. Aconite or veratrum is often beneficial in the acute affections of the larynx in children. Atropine, morphine, and aconitine in small doses may be more successful in acute rhinitis than a combination of camphor, belladonna, and quinine.

For cutting short a cold, Toeplitz has obtained success with a new remedy called mucutine, containing some new bromo and iodo combinations. It is used as a snuff. In his treatment of catarrh, Toeplitz adheres to an antiseptic alkaline solution for the nose, bicarbonate of soda and chlorate of potash dissolved in lukewarm water for cleansing dry crusts; and to tanno-glycerin, nitrate of silver, and probably Mandel's solution, for local applications. He believes it well, in some supposedly rheumatic conditions, especially in acute follicular tonsillitis, to give salicylate of soda.

Orthoform, a new remedy, is used for pain. It should be dropped on the larynx as a 12-per-cent solution. With this drug it is possible to help tuberculous patients, to relieve the distress and pain as well as the anguish during deglutition in syphilitic ulcerations.

Carbonic acid treatment stimulates the nasal mucous membrane, excites secretion, and is grateful to the patient, but the same results may be more easily obtained in a shorter time with direct irritation of the nose by friction with a cotton-covered probe.

Reviews.

PHOTOTHERAPY. By Prof. Niels R. Finsen. Translated by James H. Sequeira, M.D., M.R.C.P. Lond.
London: Edward Arnold, 1901.

Readers of the THERAPEUTIC GAZETTE will remember that from time to time we have published in the Editorial and Progress columns information in regard to the very extraordinary results which have been obtained by Finsen in the treatment of various superficial lesions by means of phototherapy. The present small octavo volume of less than 100 pages gives the methods and results which he has followed and obtained. The book deals with the chemical rays of light and smallpox, and shows how the pitting of this disease may be diminished by subjecting the patient to a red light, or in other words, by excluding the violet rays of the spectrum. Another chapter deals with light as a stimulant, and the third with the treatment of lupus vulgaris by concentrated chemical rays. Finally, there is an appendix on the light treatment of lupus by the translator. To those who wish to become thoroughly informed in regard to Finsen's method we can most cordially recommend this volume, which can be obtained in this country from P. Blakiston's Son & Company, Philadelphia.

A MANUAL OF OTOLOGY. By Gorham Bacon, A.B., M.D. With an Introductory Chapter by Clarence John Blake, M.D. Third Edition, Revised and Enlarged. Illustrated.
New York and Philadelphia: Lea Brothers & Co., 1902.

In less than four years three editions of this little manual upon Diseases of the Ear have been called for, and this we think describes its popularity as fully as need be.

The book is not an exhaustive treatise upon otology, but a small manual of about 450 pages, very freely illustrated, chiefly by means of anatomical and pathological specimens, and instruments. Dr. Bacon's opportunities for clinical observations in connection with the Nose, Eye and Ear Infirmary and the Cornell University Medical College qualify him to speak with authority in regard to matters otological.

A Text-book of Physiological and Pathological Chemistry. By G. Bunge. Second English Edition from the Fourth German Edition. Translated by Florence A. Starling. Edited by Ernest H. Starling, M.D., F.R.S.
Philadelphia: P. Blakiston's Son & Co., 1902.

The name of Bunge in physiological chemistry is so closely related in scientific thought with that of Schmiedeberg, Minkowski, and others, that anything from his pen must receive attention, both from the laboratory worker and the scientific physician. It goes without saying that the average practitioner will not have many opportunities in which he will desire to consult this book, since bedside work does not permit of much laboratory investigation. There are twenty-nine chapters in the book which deal with the various organic and inorganic foodstuffs in general and in particular; with the digestive processes and with those of absorption; with the blood and lymph; with the gases of the blood and respiration; and, more important than all in modern physiology, a consideration of nitrogenous end-products such as hippuric acid, urea, etc., etc., and the xanthin bases. Following these chapters occur others upon the functions of the kidneys and the liver, and upon certain pathological conditions such as diabetes mellitus, the infections, and fever.

Progressive Medicine. A Quarterly Digest of Advances, Discoveries, and Improvements in the Medical and Surgical Sciences. Edited by Hobart Amory Hare, M.D., Assisted by H. R. M. Landis, M.D. Volume II, June, 1902.
Philadelphia and New York: Lea Brothers & Co., 1902.

As with other volumes of Progressive Medicine in previous years which were issued in June, this one deals with surgery of the abdomen, including hernia, by Dr. William B. Coley; with gynecology, by Dr. John G. Clark; with diseases of the blood and ductless glands, by Dr. Alfred Stengel; and with ophthalmology, by Dr. Edward Jackson. To practitioners all through the country the article by Dr. William B. Coley will undoubtedly prove of great interest. He has brought to its preparation not only a thorough examination of current literature, but expresses in almost every page his own conception of what the surgeon should do when called upon to treat lesions connected with the abdominal viscera. As Dr. Coley has for many years had a very large experience in connection with this subject, there are few who are better qualified to speak in this respect. The article is illustrated whenever illustrations are necessary to increase the value of the text for practical purposes. The article of Dr. Coley extends over 145 pages. Dr. Clark's article is written in much the same manner as that of Dr. Coley, and embodies practically all that has taken place in the realm of gynecology during the last twelve months. So, too, in Dr. Stengel's article, after a careful consideration of the advances which have been made in studying the blood, there is given interesting information in regard to scurvy, purpura, and metabolic diseases, including diseases of the thyroid gland and Addison's disease.

Dr. Jackson's article also embodies everything in the way of diagnosis and treatment in connection with diseases of the eye, and it bears the impress of his personal opinion in regard to the diagnostic and therapeutic methods which are advised.

The Artificial Feeding of Infants. By Charles F. Judson, M.D., and J. Claxton Gittings, M.D.
Philadelphia: The J. B. Lippincott Co., 1902.

The artificial feeding of infants with each year seems to gain additional importance. We believe that ultimately a large amount of theoretical calculation now connected with this subject will, so far as practical medicine is concerned, be to some extent cast aside, but there can be no doubt that the careful scientific study of the food value of milk and cream and of its proper dilution and mixture has saved and will save the lives of many children. The present volume deals quite exhaustively with this important subject. It opens with a chapter devoted to historical information, and then considers mothers' milk, cows' milk; the processes of digestion; the modern methods of infant feeding and weaning; the care of milk and its bacteriology, and the various methods of sterilizing it. The closing chapters deal with the principles of infant feeding, with

methods of home modification of milk and artificial foods; and finally there is an appendix in which recipes are given, and a bibliography which shows that the writers have carefully studied the literature of the subjects of which they write.

DIE AETIOLOGIE DES AKUTEN GELENKRHEUMATISMUS NEBST KRITISCHEN BEMERKUNGEN ZU SEINER THERAPIE. (The Etiology of Acute Articular Rheumatism, with Critical Observations concerning its Therapy.) The v. Coler Library, Vol. XIII. By Dr. A. Menzer, Assistant of the Third Medical University Clinic at the Charité Hospital; with a Preface by Professor Senator.

Berlin: August Hirschwald, 1902.

Menzer's work on the bacteriology of rheumatism and the importance of the tonsils in infection with this disease, as well as his belief concerning the frequency of infection through the tonsils in other conditions, has become so well known as to make this small monograph very acceptable; for in it he collects under one cover the various portions of his own work, and gives a critical discussion of the work of others, as well as a brief historical review of the ideas that have been held concerning the etiology of acute rheumatism.

He, of course, dismisses the possibility that rheumatism is due to anything but bacterial infection. He believes that its most common cause is undoubtedly a streptococcus, and that the infection, in almost all instances, takes place through the tonsil. He is, however, emphatically of the opinion that it is not, from a bacteriological standpoint, a single disease; he thinks that it is rather the expression of a peculiar reaction of the organism to various forms of infection, the peculiarities of the disease being chiefly due to the condition of the individual infected and his method of reaction, rather than to the nature of the bacteria.

The author gives an extensive criticism of the work of Achalme and others on the bacillus described by Achalme, and concludes that the organism described by different authors was certainly not always the same. He believes that it was, at any rate, an accidental, usually a post-mortem, infection. He also gives an extensive discussion of Meyer's work, which is well known to any who are familiar with that of Menzer, and concludes that the animal experiments have shown only that the conditions caused by injecting rabbits with streptococci of various sources cannot be any more clearly distinguished than can rheumatism and pseudorheumatism in human subjects. He also believes that the disease caused by Meyer through injection of animals with his so-called specific streptococci was nothing more than pyemia.

The most interesting part of the book to the general reader is the discussion of the treatment of acute rheumatism. After an extensive reference to the literature and to case-statistics, Menzer comes to the conclusion—which will be a shock to many a reader—that the use of the salicylates in acute rheumatism probably interferes with nature's methods of curing the disease. He believes that these remedies act only by reducing the pain and the fever, but do not lessen the mortality or the duration of the disease; and that complications—particularly cardiac complications—are more frequent under the use of the salicylates than by the older methods of treatment. From his standpoint there is evidently an analogy to be drawn between the use of salicylates in rheumatism and the free administration of opium in appendicitis; and he is inclined to believe that the salicylate treatment will be proved to be irrational. This extremely iconoclastic teaching on first thought sounds decidedly overenthusiastic; but the book is written in a very calm, critical spirit, and the author states that he still uses the salicylates, but with a somewhat unquiet conscience. It is certainly worth while to determine in how far he is right, rather than to dismiss his statements without any consideration. The only suggestion that he would offer as a substitute for the salicylate treatment is to attempt to provide a specific antistreptococcus serum from streptococci cultivated from the tonsils; in this way he hopes that a serum with some specific action may be provided for many cases.

D. H. E.

Correspondence.

PARIS LETTER.

BY R. H. TURNER, M.D. (PARIS).

The question of nurses in France is an important one, as so far nothing is to be found in this country to compare with what exists in England or in America. The "garde malade," as she is called, does not

receive the training which is given in the hospitals of New York or Philadelphia, and a book recently written by Dr. Hamilton and Felix Reynault on this subject points out the defects of the system employed in France and the means of changing it. A certain number of nurses in France belong to the religious orders, and they have been employed a long time in the hospitals. The municipal council, however, which is distinctly anti-clerical, has sought to get rid of them, and they are only retained at the Hotel Dieu, at St. Louis, and at the Boucicaut Hospital.

It is interesting to note how difficult it is to get a position as physician of the hospitals in Paris. There may be five to six places offered, and there will be fifty to sixty candidates. As a rule physicians do not obtain the position until they are about thirty-five years old, surgeons however getting a place when they are thirty-two.

On the 28th of June the inauguration of the new pavilions of the Paris Maternity took place. The building cost about $220,000 and contains 114 beds, which makes a relatively low expenditure for each bed. There are now six new maternities in Paris, so that one can say that though the number of births is decreasing the cases of midwifery are well taken care of.

The new preparation of arsenic, called arrhenal, and the scientific name of which is methylarsinate of soda, has been tried in migraine with excellent results. It has also been used in malaria, and has a notable effect on the anemia seen in this condition.

Drs. Bolognesi and Charpentier described at a recent meeting of the Society of Therapeutics the properties of a new drug, called hypnopyrine. It is a chloride preparation of quinine forming long prismatic white needles, and has a bitter taste and a slight chloride odor. It is soluble in eight parts its weight of cold water, very soluble in boiling water and alcohol, and is insoluble in ether and chloroform. Mineral acids dissolve it without causing any coloration even when heated to boiling point, and alcohols cause its decomposition. As a therapeutic agent, hypnopyrine is analgesic, hypnotic, and antithermic, without causing the severe perspiration produced by drugs of the aromatic series. Its effect upon fever is but slight, as it diminishes the temperature only from one-half to a whole degree when given in doses of fifty centigrammes to one gramme. Excellent results have been obtained by its use in infectious diseases such as influenza, typhoid fever, eruptive fevers, and pernicious forms of intermittent fever. It should be given in doses of from 25 to 50 centigrammes, or in pills of 10 to 20 centigrammes, the dose for twenty-four hours being one to two grammes for an adult.

The serum of Trunecek, which has been employed recently in certain diseases caused by arthritism, has been generally administered subcutaneously, but of late Dr. Leopold Levi has been trying it in enemata with variable success. He has also formulated a powder containing the principal ingredients of the serum of Trunecek:

> Chloride of sodium, 10 grammes (2½ drachms);
> Sulphate of soda, 1 gramme (15 grains);
> Phosphate of calcium,
> Phosphate of magnesium, ää 0.75 centig. (12 grains);
> Carbonate of sodium, 0.40 centig. (6 grains);
> Phosphate of sodium, 0.30 centig. (5 grains);
>
> To be divided into 13 capsules, containing one gramme (15 grains) of the mixture. One or two are to be taken daily, though sometimes it is well to give only 50 centigrammes (7 grains).

Sometimes slight diarrhea is caused by the use of this powder, and in such cases a few drops of laudanum easily suppresses this trouble. It may also occasionally be well to give some iodide of soda or some nitroglycerin. This treatment was tried on some cases of paraplegia, spasmodic hemiplegia, and arteriosclerosis with cardiac hypertrophy. The results obtained were quite satisfactory, according to Dr. Levi.

Dr. Gilbert, physician of the Paris hospitals, who is an authority on bacteriology, has been examining the microbic condition of the bile and has made cultures with bile taken from the gall-bladder and the common duct, upper and middle part. The results showed that there were no aerobic microbes in almost all cases, but always some anaerobic specimens. Until now it had been thought that there were no microbes in the bile in the normal condition, but the researches of Gilbert on this subject show that there is a new chapter to be studied in connection with the infection of the biliary ducts.

Professor Gautier, of the Paris Faculty of Medicine, has advanced the idea that a certain amount of arsenic exists normally

in the thyroid gland and in the hair, but this opinion has been opposed by certain German scientists, such as Holmeizer and Czerny. At a recent meeting of the Academy of Sciences Dr. Bertrand said he had used a perfected apparatus of Marsh and had found some arsenic in the thyroid gland of a calf a month old, which had never been given arsenic, and whose mother had not been given any. Dr. Bertrand claims the German scientists have not been sufficiently careful in their analysis.

At a meeting of the Society of Pediatrics held on the 17th of June, Drs. Barbier and Alquier gave an account of the causes of death from diphtheria in forty-five autopsies. The most frequent cause of death was cardiac thrombosis, which was found in fifty per cent of the cases; almost always the thrombus occupied the right heart. A bacteriological examination of the clot gave no result in four cases. Four times the Loeffler bacillus was found, twice the streptococcus, once the staphylococcus, and once the bacillus of diphtheria associated with the streptococcus. Cardiac thrombosis seems to be quite frequent in severe forms of diphtheria. It comes on during convalescence —that is to say, nine to fifteen days after the disappearance of the false membranes. Death is quite sudden, sometimes preceded by paleness of the face, cyanosis, agitation, and anguish. Another point which has been brought to light by the researches of Barbier and Alquier is the frequency of latent tuberculosis. Out of forty-five autopsies, in eighteen cases—that is to say, forty per cent—tuberculous lesions were found. In twenty-five per cent of the cases there were recent tuberculous lesions brought on by diphtheria. At this same meeting Dr. Rocaz, of Bordeaux, described the lesions he found in two children who showed bulbar symptoms—vomiting, paleness of the face, smallness of the pulse. The nerve centers of the medulla oblongata were examined. and the nerve cells showed the following changes: chromophilia, chromatolysis, and a granular condition showing degeneracy and destruction of the nerve cells. These lesions are specially manifest in the pneumogastric center, and are due, according to Dr. Rocard, to the action of the diphtheritic toxin. Dr. Breton sent the report of a child who showed symptoms of hemiplegia during his convalescence from diphtheria. There appeared on the leg some livid spots which became sphacelous. The hemiplegia has not yet disappeared.

Dr. Rocaz has been trying a new treatment of whooping-cough by the use of compressed air. The children were placed with their parents in two large metallic reservoirs, and the air was compressed up to from 10 to 40 centimeters of mercury. The compression was increased slowly, remained stationary for about half an hour, and then decreased. This method diminishes the number of attacks of coughing, and shortens the duration of the disease.

LONDON LETTER.

By Raymond Crawfurd, M.A., M.D. Oxon., F.R.C.P. Lond.

With the present month the meetings of the various medical societies come to an end for the academic year, and in my next letter I hope to deal with the annual meeting of the British Medical Association at Manchester. There have been several interesting communications to the various societies to which I may briefly refer. Hunter's paper with lantern demonstration at the Pathological Society of London, on the "Infective Lesions of the Tongue, Stomach, and Intestine in Pernicious Anemia," served to throw light on the precise nature of the infective agent in this disease, a point that his previous communications had left in some ambiguity. He postulates a double causation: (1) a specific infection, of which the chief evidence is a glossitis; and (2) a septic infection of the mouth, stomach, and intestine, of which the chief evidences during life are varying degrees of "oral sepsis" and "septic gastritis," the latter recognizable during life by the vomit and various symptoms of oral, gastric, and intestinal disturbance, and after death by the conditions of gastritis, gastric and intestinal atrophy, and now and again erosions and ulcers. He lays it down distinctly that sepsis alone cannot produce pernicious anemia, and that the characters of anemia due to this cause are quite separate and distinct, for in septic anemia there is no evidence in the liver of hemolysis. Hunter described a peculiar form of glossitis that he had encountered in the last twenty-five cases that had come under his own observation. The mucous membrane was much thinned and in places

entirely lost, so that the lymphatics of the tongue were practically laid bare to the contamination of the mouth. This thinning of the mucous membrane produces the peculiar glossy surface of the tongue, characteristic of the disease. Hunter obtained pure cultures of streptococcus longus from the lymphatics of the tongue. On injection of these into mice, death ensued in six or seven days. In the stomach inflammatory lesions of the mucous membrane were found, which in some instances penetrated almost down to the submucous coat. Evidence of the exfoliation of the epithelium is to be found in the mucoid vomit, and in the final stage complete atrophy of the mucous membrane may occur. Hunter also found unmistakable evidence of ulceration and atrophy in the intestines. The mucoid vomit, which is usually brought up in the morning, was found on bacteriological examination to contain pure cultures of streptococcus longus.

In a comprehensive study of enteroptosis at the Clinical Society of Manchester, Dr. Arnold Lea, after dealing with the etiology and symptoms, enunciated certain general principles of treatment. It must be directed (1) to improvement of nutrition and the removal of any causal factors, such as tight lacing, overexertion, etc.; (2) to the regulation of the stomach and bowels by careful dieting and medicinal treatment; and (3) to the restoration of the muscular and fascial supports of the abdominal walls. He specially recommends the following exercises: (1) The patient lying down with folded arms raises herself into a sitting posture; (2) the patient lying down and maintaining extension of the knees raises the legs to a position at right angles to the abdomen, each limb being raised singly, then simultaneously; and (3) deep breathing, especially movements of inspiration with a closed glottis, and after the lungs have been emptied by forced expiration. Each of these exercises should be carried out from six to twelve times night and morning. In addition it is usually necessary to support the abdominal wall by a properly fitting belt, which must reach below the hips so as to lift up the abdominal viscera from below. With the belt it is well to combine the straight-fronted corset, which while leaving the waist free exerts its pressure on the abdomen chiefly below the umbilicus. Where there is special mobility of any particular viscus it may often be necessary to call in the aid of surgery.

It is certainly open to question whether much improvement is to be looked for by active exercises in subjects of asthenic type, and it is undeniable that far more relief is in the large majority of cases to be derived from supplanting the abdominal muscle by a firm belt, than by attempting to restore to the muscle a tonicity that it has shown a decided tendency to renounce.

A correspondent of the *Lancet* describes a simple method of producing local anesthesia for small operations. A solution is prepared consisting of adrenalin chloride, 2 drachms; cocaine, 5 grains; and water, ½ ounce. Lint is folded into a pad of four layers, soaked in the solution, and placed under a positive electrode. A large negative electrode is applied elsewhere, and a current of from 15 to 30 milliamperes is slowly induced and run for the space of from five to ten minutes. The surface may then be washed with ether, and any superficial operation performed painlessly and without loss of blood.

At the Edinburgh Medico-Chirurgical Society, Caird gave the details of twenty cases of gastroenterostomy in which he had operated for pyloric stenosis, in all the cases but one presumably due to malignant disease. It must be conceded that the operation in such cases is always one of some difficulty, and in cases of extensive disease, perhaps of insuperable difficulty, and fraught with grave risk to the patient; and even if successful in the performance, rarely prolongs life to an extent that would justify operation. In some cases pain is somewhat relieved; but that in such a series of cases the result of the operation should have been often such a gain in weight and bodily health as to cast doubt on the diagnosis of malignancy certainly marks them out as a series of unusual type. It may be taken as an axiom that whenever a pyloric tumor, however small, can be detected by external palpation, the disease can no longer be considered to be in an early stage. Caird pronounces in favor of the retrocolic operation: where the amount of disease and the mobility of the stomach permits, he employs a posterior gastrojejunostomy as close to the duodenum as convenient; the anterior operation he reserves for the more complicated cases. He does not wash out the stomach prior to op-

eration in patients who are unaccustomed to lavage, or where extreme weakness lends risk to the procedure. During the night following the operation, if the condition is good, the patient receives teaspoonfuls of warm water and milk; if pain or restlessness sets in, a small dose of morphine is given. Next morning, if eructation or vomiting is present, the stomach is washed out. Lavage frequently steadies down a rising pulse, but failing this his practice is to transfuse 30 ounces of saline solution. Two of Caird's cases resulted, as sometimes is the case, in disappearance of the initial tumor, though in one of the cases there was a recurrence in the cicatrix in the abdominal wall. This favorable issue is, however, so rare that in deciding for or against the operation it may almost be regarded as a negligible quantity.

HOW TO TREAT NOSEBLEED.

To the Editor of the THERAPEUTIC GAZETTE.

SIR: When physicians discover anything, either through design or accident, that will be of practical aid to the medical profession, it should be put into possession of the facts. One of the things that will worry a physician, beyond description, is a case of prolonged bleeding from the nose; usually simple in nature, yet often hard to control. With me the following practical plan of treatment is original, having commenced to use it eight years ago; and having never seen a description of this treatment I give it to the profession for what it is worth. Should it be that others have used the same method I will say that it is not generally known.

In obstinate cases of epistaxis a condom will often make a very satisfactory and efficient tampon when other kinds of tampons have failed. I have used such tampons on several different occasions, and find them more satisfactory in every respect than those of cotton sponge or gauze. They exert a more uniform pressure upon the mucous membrane of the nasal passages, filling the depressions better than any other tampon, without the possible bad effects on the Eustachian tubes and posterior nares; and then they are easier in every way to insert than any other kind of tampon, as any one who has ever attempted to plug the nasal passages of a struggling child (or adult for that matter) with a cotton sponge or gauze tampon will readily appreciate.

To insert, oil the condom with vaselin or other bland antiseptic oil; do not use glycerin on account of its effect on both the rubber and the mucous surfaces. Place a new semiflexible catheter inside the condom and push it back as far as desired into the nasal passages; then partially withdraw the catheter, using it as a tube with which to inflate the tampon. Next tie the condom close to the external nares, and the job is done.

To remove, deflate, and the tampon can be taken away easily, without so greatly disturbing the newly formed adhesions and clots and starting the hemorrhage anew as other tampons are so apt to do.

I have left them in place for forty-eight hours, fully controlling the hemorrhage and producing no unpleasant feelings nor bad results.

As a matter of fact we would not expect much from this or any other tampon in a case of epistaxis from hemophilia, yet this is the best, and may control the hemorrhage long enough to give remedies directed to the blood time to act.

The only thing to guard against is not to get the tampon uncomfortably tight. Lightly inflated I have used them as internal splints in a case of fracture of the nose with splendid results.

Respectfully,

J. C. MATTHEWS, M.D.

SPRINGFIELD, Mo.

ANESTHESIA DURING SLEEP.

To the Editor of the THERAPEUTIC GAZETTE.

SIR: On page 384 of the THERAPEUTIC GAZETTE for June 1 note an article on "Anesthesia During Sleep," and as I have accomplished it at least twice I thought it would be of interest to you to know it.

The last time was July 26, 1900, when I was called to a little girl about seven years old with the humerus fractured just above the condyle. I found her sleeping and completely anesthetized her with chloroform without the least struggle or slightest approach to consciousness. I set the arm at 11:30 P.M., put it up in splint and bandages, and when she awoke in the morning she was surprised to find her arm in a splint.

Yours respectfully,

D. ROSE, M.D.

CHICAGO, ILL.